

amateur radio



Registered at G.P.O., Melbourne, for
transmission by post as a periodical

Vol. 35, No. 4

APRIL

1967

25c

DISPOSAL BARGAINS

AT OUR BULK DISPOSAL STORE

8 PARK STREET, GLENFERRIE, VIC. (OFF GLENFERRIE ROAD)

Phone 81-1935

(Mon. to Fri., 10 a.m. to 5 p.m.; Sat., 10 a.m. to 12.30 p.m.)

NEW VALVES

1A3	50c	574	...	\$1.75	6CW4	...	\$3.90	7L7	75c	806A	\$1.25	3-63
1A5	50c	504UB	...	\$1.45	6F8	...	50c	7N7	75c	902	...	\$7.00
1A7GT	\$2.60	5V43	...	\$1.75	6G6	...	75c	7W7	35c	8-82	954	50c, 5-82
1C7	50c	5Y4G	...	\$1.35	6G8C	...	\$2.60	12A9	50c	955	...	50c
1D4	75c	5Y4	...	75c	6HGT	...	50c	12AH7	50c	959	...	50c
1D6	75c	5Z3	...	\$1.75	20c	12c for \$2		12AT7	75c	985A	50c, 5-82	
1F5	\$1.60	6A3	...	75c	6J5GT	...	\$1.00	12A17	...	1616	...	\$1.50
1H5	75c	6A6	...	75c	6J5	75c, 3-82		12A17A	...	1625	50c, 5-82	
1K5	50c	6AB7	...	\$1.00	6J7G	50c, 3-82		12AV6	75c	1626	...	50c
1K7	50c	6AC7	50c, 5-82		6K6	...	\$1.00	12B8E	75c	1629	...	50c
1L4	50c	6AC8	...	50c	6K7	...	50c	12C7	50c	1636	...	75c
1L5	\$1.00	6AG7	...	\$1.25	6K8GT	...	\$1.25	12D5	50c	5753	...	\$2.60
1L5S	50c	6A15	...	75c	6K8 Metal	\$2.00		12S47GT	\$1.00	9821	...	\$1.00
1M4	50c	6AK5	...	\$1.50	6L7	...	50c	12SCT	...	9904	...	50c
1M5	50c	6AL5	...	\$1.40	6N7	...	50c	12SCT	...	E450 10c	...	10-31
1P5	50c	6AM5	...	\$1.50	6R7	...	75c	12SK7	...	ECC35	...	\$2.00
1Q5	50c	6AM6	...	\$1.00	6S5	...	75c	12SN7	75c	ECH33	...	\$2.00
1R5	\$1.50	6ANTA	...	\$1.50	6S4T	...	75c	12SN7	...	ECH35	...	75c
1S2	\$1.75	6ARYGT	...	\$2.10	6SC7	...	75c	12SH7	50c, 5-82	EF38	...	75c
1S5	\$1.60	6AS7GT	...	\$2.30	6SF3	...	75c	16A5	\$1.70	EF65	...	\$1.85
1T7	\$1.00	6AU5	...	\$1.45	6SP7	...	75c	16A5	\$2.10	EY91	...	50c
1U4	\$1.60	6AUS	...	\$2.40	6SH7	50c, 5-82		25L6	\$1.00	KT66	...	\$3.80
1U5	\$1.60	6AV6	...	\$1.40	6SUT	75c, 3-82		25Z6	\$1.00	QOE03/12	...	\$4.75
2A5	75c	6B6	...	75c	6SK7GT	...	\$1.00	25LGGT	\$1.00	QV204/7	...	\$2.50
2A7	75c	6BA8	...	\$1.25	6SL7GT	...	\$1.25	19c	50c	RL18	75c, 3-82	
2C28	50c, 5-82	6BE6	...	\$1.55	6SN7GT	...	\$1.00	30	50c	UL41	...	\$1.00
2D21	\$1.20	6BL6	...	\$1.80	6SQ7GT	...	\$2.00	47	50c	UR33	...	75c
2E26	\$2.30	6AN18	...	\$1.85	6SS7	...	75c	50c	50c	VR367	...	50c
2X2	50c	6BQ5	...	\$1.70	6U5	...	\$1.05	53	50c	VR33	...	50c
2A4	\$2.20	6BR5	...	\$1.45	6UTG	50c, 5-82		\$1.70	50c	VR102	...	50c
2A5	\$1.60	6B36	...	\$1.45	6U5	...	\$1.70	84	50c, 5-82	VR133	...	50c
2A5	\$1.60	6BY7	...	\$1.45	6V4	...	\$1.14	107A	...	VR136	...	50c
2Q5	\$1.00	6BZ6	...	\$1.85	6VG7GT	...	\$1.75	717A	75c	VR137	...	50c
3A4	\$1.00	6C8	...	50c	6X4	...	\$1.00	897	\$1.75	VR150	...	\$1.55
3V4	\$1.50	6C8	...	\$1.00	6X5	...	\$1.45	928	\$1.00	VT18 (SD6)	...	50c
5AR4	\$2.80	6CG7	...	\$1.55	7A8	35c, 8-82		929	\$2.00	V727	50c, 5-82	
5AR4	\$2.80	6CH6	...	\$2.35	7C5	50c, 5-82		930B	\$1.50	VU301	...	75c
5B54	...	6CM5	...	\$2.25	7C7	...	50c	932A	\$2.00	VU39A	...	50c
5B1P	...	6CM5	...	\$2.25	7E6	35c, 8-82		937	\$2.00			

CRYSTAL CALIBRATING UNIT

TYPE 10

Nominal range: 500 Kc. to 30 Mc. 500 Kc. xtal and 250 Kc./500 Kc. B.F.O. Provides heterodyne output in steps of 1 Mc. Dial driven by machine cut strip gears, calibrated in 2 Kc. div. Easily read to 250 cycles. Output "spiked" approx. 1 sec. intervals, identifies beat note. Power requirements: 12v. d.c. at 0.5 amp. 250 volts at 15 mA. This is a precision instrument and a gift at \$9.75.

PP/439/APG-30 POWER SUPPLY

Radar type, new. Contains 36 valves—3 6AQ5, 6X4, 4 12AX7, 6A2, 2 6AK5, 3 6AL5, 2 12AT7, 2 12D1, 6AS5, 4 2C51, 2 6J6, 6AG5, 2 6AH6. Also twin 28v. blower motor, relays, variable cond., transformers, etc. 28v. 550 cycle. Ideal for wringing. Sorry, no further information. Brand New. \$35.

TRANSISTOR TRANSFORMERS

Output type, 300 ohms c.t., 15 ohms, 81 each. Driver type, 3500 ohms c.t., 1330 ohms, 81 each.

DURAL TUBING

1/4 inch Tubing, 6 ft. lengths 30¢ per ft. \$2 or 40¢ per 6 ft. length.

POTENTIOMETERS

Wire Wound, 4 Watts, 1 1/2 inch diameter. Sizes available: 3, 10, 25, 50, 250, 500, and 50K ohms, 4/10 each.

MODULATION AND DRIVER TRANSFORMERS

Modulation Transformer, 15 watts, pair of 6AQ5 to 2E26 valve. Also Driver Transformer, single ended primary to push-pull grids of 6AQ5. £2 the lot, or Mod. Trans. 30/10, and Driver Trans. 10/10.

ROTARY WAFER SWITCH

1 pole 24 position 3 bank. Physical size: 3 x 3 inch. Price 30/10 (\$3.00).

BRACKET BEZEL LAMPS

1/2 inch diam. Bezel in Red, Amber, Green. Suit screw type globe, 35c, 4 for \$1.20.

DISPOSAL METERS, 0-50 mA.

G.E.C. Panel Meters, 50 mA, 3 1/4 inch round, 2 1/2 inch round mounting hole. Brand new, \$1.75

CABLES

2-core, shielded, new, 20c yard.
12-core, shielded, new, 40c yard.
3-core, plastic covered, new, 20c yard.
4-core, plastic covered, new, 25c yard.
6-core, plastic covered, new, 30c yard.

TRANSCIVER

TR1987, English (later version of SCR322), 15 watts, 21 Valves. Freq. coverage: 115 to 148 Mc. Crystal locked receiver. Transmitter uses TT15 output valves. Three stage exciter using 4.85 Mc. crystal osc. 6AM5, doubler 6AM5, driver amp. QV04/7, p.a. amp. TT15. In-built modulator, complete with 25 volt generator. Condition as new. To clear £15 (\$30). Circuit for above unit, 10/- each.

NEW VALVE SOCKETS

4/250A Sockets	...	20/-	each
Acorn	...	3/6	"
EF50	...	2/6	"
VC97	...	10/-	"
815	...	12/6	"
EA50	...	2/6	"
5-pin	...	2/6	"
6-pin	...	2/6	"
7-pin	...	2/6	"
7-pin P.T.F.E. Sockets	...	5/-	"
Locktail P.T.F.E. Sockets	...	5/-	"
Special completely shielded 7-pin P.T.F.E. socket and shield	...	10/-	pair

NEW CHOKES

7-5H. 125 mA. 30/- ea. 14 H. 60 mA. 12/6 ea. 10 H. 4 mA. 12/6 ea.

SPECIAL BARGAINS

Block Condensers, 2 mF/2500 v.w. ... \$2.50 (Pack and Post 25c.)
DC Crystal Holders, new, less crystal, 75c.
Carpenter Relay and Socket, Type 3E1, 180cT.
250 ohms, 900T 200 ohms, \$1.50.
P.M.G. Strip Boards, containing 24 Jacks, \$3.
P.M.G. Strip Boards, containing 45 Jacks, \$5.
Headphone Cords, new, 45c pair.
3-pin Plug with two yards Cord, 45c.
Bags of Mixed Resistors (50), \$1.25 bag.
P/1 Fuse Holders, 40c each.
50 ohm Coaxial Cable, 3/16 inch diam, new, 23c yard.
27 ohm Co-ax Cable, 33 ft. lengths, 3/16 inch diameter, £1.
27 ohm Co-ax Cable, 27 yard lengths, 3/16 inch diameter, \$2.
12 Acrylic Packs, 50 each.
12-core Cable with Plug, 22 yards long, \$5.
P.M.G. Key Switches, 75c each.

GLIDE PATH RECEIVERS

Type T33D, complete with valves and Crystals ... \$10.00 (Pack and Post \$1.00.)

HAM

RADIO SUPPLIERS
5A MELVILLE ST., HAWTHORN, VIC. Phone 86-6465
8 PARK STREET, GLENFERRIE, VIC. Phone 81-1935

"AMATEUR RADIO"

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA FOUNDED 1910

APRIL 1967
Vol. 35, No. 4

Editor:
K. E. PINCOTT VK3AFJ

Assistant Editor:
K. M. Cocking VK3ZFQ

Publications Committee:
G. W. Baty (Secretary) VK3AOM
A. W. Chandler (Circulation) VK3LCL
Ken Gillespie VK3GK
E. C. Manifold VK3EM
W. E. J. Roper VK3ARZ

Draughtsmen:
Clem Allen VK3ZIV
Ian Smith 36 Green St., Noble Park

Advertising Enquiries:
C/o. P.O. Box 36, East Melbourne, C.2, Vic.
or
Mrs. BELLAIRS, Phone 41-3535, 478 Victoria
Parade, East Melbourne, C.2, Victoria. Hours
10 a.m. to 3 p.m. only.

Publishers:
VICTORIAN DIVISION W.I.A.
Reg. Office: 478 Victoria Pde., East Melbourne, C.2, Victoria.

Printers:
"RICHMOND CHRONICLE," Phone 42-2419,
Shakespeare St., Richmond, E.1, Vic.

★

All matters pertaining to "A.R." other than subscriptions, should be addressed to:

THE EDITOR,
"AMATEUR RADIO,"
P.O. BOX 36,
EAST MELBOURNE, C.2, VIC.

Acknowledgments will be sent following the Committee meeting on the second Monday of each month. All Sub-Editors should forward their articles to reach "A.R." before the 6th of each month. Any item received after the Committee meeting will be held over until the next month. Publication of any item is dependent upon space availability, but in general about two months may elapse before a technical article is published after consideration by the Publications Committee.

★

Members of the W.I.A. should refer all enquiries regarding delivery of "A.R." direct to their Divisional Secretary and not to "A.R." direct. Non-members of the W.I.A. should write to the Victorian Division, C/o. P.O. Box 36, East Melbourne. Two months' notice is required before a change of mailing address can be effected. Readers should note that any change in the address of their transmitting station must, by P.M.G. regulation, be notified to the P.M.G. in the State of residence, in addition "A.R." should also be notified. A convenient form is provided in the "Club Book".

★

Direct subscription rate is \$3.00 a year, post paid, in advance. Issued monthly on first of the month. February edition excepted.

FEDERAL COMMENT

☆

COMMUNICATION BREAKDOWN?

Without really thinking, most Amateurs probably agree with the proposition that communications is their hobby. In a sense the proposition is, of course, completely accurate.

Yet a failure of communications is probably a fundamental cause of many of the things that worry Amateurs and cause concern within the Amateurs' organisation. The failure on the part of the organisation to communicate to its members what it has done, or has not done—and why; the failure of the members to communicate to their organisation what they wish to be done—and why; the failure of Amateurs to communicate to non-Amateurs what Amateurs are, what they do and what they can do; the failure of one Division to communicate to another Division sufficient information so that the one can at least appreciate the other's point of view—all these are failures in communication.

Failures in radio communication can occur not only because of transmission failure, but also as a result of a failure in reception. This is also true of the communication of facts and ideas between people. The repetition of incorrect information is also evidence of a communication failure.

On these failures are built misunderstandings, for we criticise and are criticised on the basis of wrong information or insufficient information. From this, resentment follows naturally and tolerance disappears. Misunderstandings, criticism, resentment and lack of tolerance are all factors that result in the weakening of any organisation.

Maybe we, as communicators, should be able to pride ourselves on our communications. Can we?

—JOHN BATTRICK, VK3OR, Federal Secretary Elect.

CONTENTS

W.I.C.E.N. in Tasmania during the Bush Fire Disaster	2	Camp Technology, 1967	16
A Synthetic Battery for Your Carphone—Part Two	5	Technical Correspondence: Articles on Transistor Transmitters 16	
"Supergain" Antennae	6	List of Articles on Transistor Transmitters	17
A "Corner" Antenna for 7 Mc. ..	7	Correspondence	18
"The Thing"—Transistorised; Part Two	9	YRC	19
Transistorised B.f.o.	12	Publications Committee Reports ..	19
Prediction Charts for April 1967 ..	12	D.X.C.C. Listings	19
Sideband:		Contents:	
Another U.K. Transceiver	13	"CQ" World Wide S.s.b. Contest	19
Field-Effect Transistors	13	P.A.C.C. Contest, 1967	19
A Field-Effect Valve	13	DX	21
Heater/Cathode Emission	13	SWL	22
New Call Signs	13	VHF	23
Light Wave DX?	15	Awards for Technical Articles ..	23
A VK2 in W-Land	15	Federal and Divisional Monthly News Reports	24

W.I.C.E.N. IN TASMANIA DURING THE BUSH FIRE DISASTER

GREG. JOHNSTON,* B.Sc., VK7ZKJ

Date: February 7, 1967; **Time:** about 1215 E.A.S.T.

Location: Hobart area.

Situation: Temperature 100+°F., winds gale force from north. Commercial radio sources calling for volunteer firefighters for many areas all around southern Tasmania. Smoke haze thickening rapidly in city area.

HAVING thus set the scene, it is not remarkable that the 6 metre mobile net frequency was well occupied from about 1215 E.A.S.T. and about two hours later was being used in earnest by several mobiles. About that time the first attempts at organisation were made when, after consultation with Tom VK7AL and after ascertaining that phone exchanges were jammed, lines were down and power off in many suburbs, Dave VK7ZMD was sent into the Fire Brigade Hq. with 6 metre mobile gear to relay direct to them fire reports from mobiles moving around trouble spots lacking telephone communications through fire or exchange overload. When the Fire Brigade personnel realised that they could no longer use the information being relayed to them, due to complete occupation of all their personnel and resources, VK7ZMD was relieved of duty.

At about this time the official P.M.G. station, with the R.I. on the mike, came up on the 6 metre net frequency and informed all stations that they were officially urged to continue to handle distress traffic.

This gets us to the point where but one commercial radio source was still

on the air broadcasting a continual stream of queries and requests for firefighters. Someone, I don't know who, suggested we put a base mobile outside the studio of this radio station (7HT) and use the mobiles to try and assist them in the job they were doing. One query satisfied after a short relay, due to power lines across the road, concerned the fate of the children from the Tarooma Primary School. They had been evacuated to the beach in a timely move by their teachers and were being looked after. No doubt the parents of these children were very relieved to hear this news come back over 7HT after a 6 metre VK7ZKJ to VK7ZBJ to 7HT relay. All commercial communications were out into Tarooma area.

At about 1700 hours the President of the W.I.A. (Tom VK7AL) approached the Police and offered our services as a going concern. About two hours after, Tom received a telephone call from the Police asking for help with communications into Huonville. At this stage we were able to inform them that the situation had been taken in hand by our organisation working in conjunction with Civil Defence and that communication should shortly be available.

NETS ESTABLISHED

Also at 1700 hours Lee VK7KC contacted Jack VK7JB on 3590 Kc. with the upshot being that VK7JB went to Civil Defence Headquarters only to find Ted VK7EB in attendance with equipment half set up on 3590 Kc. Shortly after this, at about 1715 hours, VK7KC and VK7EB set up a 3590 Kc. link, with VK7KC also linking through on 6 metres to most of the mobiles from his own mobile. At approx. 1730 hrs. VK-

7ZKJ arrived at VK7KC's QTH with a.c. operated 6 metre rig and installed it as base station for the mobile net on 53.035 Mc. Thus by 1730 hrs. we had W.I.C.E.N. control station linked to Civil Defence Hq. on 80 metres. Civil Defence in turn had facilities for distributing the information W.I.C.E.N. obtained to the appropriate quarters.

Very soon after this, with situation reports coming in rapidly and finding coverage was not up to the mark on 6 metres because mobiles were getting too far out of the city area, a relay station was set up on Mt. Rumney by Barry VK7ZBJ and Ron VK7ZRO at about 1815 hrs. Mt. Rumney was burnt off prior to this, but was dangerous with trees coming down over the road — it is situated east of Hobart overlooking the airport and so situated as to be a highly favoured location for extended 6 metre ground wave communication.

Thus by 1815 hours W.I.C.E.N. had set up 6 metre facilities allowing communication over a radius of about 30 miles from Hobart, had several 6 metre mobiles in trouble spots sending in situation reports, several more mobiles standing by, and a 3.5 Mc. link from W.I.C.E.N. Control to Civil Defence Hq. relaying information coming in on 6 metres for routing to Police or other services.

By 2100 hrs. VK7ZZ, VK7MF and VK7DR were handling traffic on 40 metres in relation to P.M.G. communication replacement requirements.

As the roads were very dangerous in most areas outside the metropolitan area with bridges burnt out and power and phone poles coming down across the roads, all mobiles were recalled at approx. 0100 hrs. Feb. 8 after many



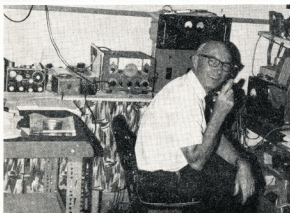
View of burnt out Springs Hotel. Cover photograph shows the remains of the hotel with Mt. Wellington and t.v. mast in background. Hotel was double story, unlicensed, tourist stopping place for morning and afternoon tea half way up Mt. Wellington.



Civil Defence Headquarters, Public Buildings, Hobart.
Rear: Jack Batchelor, VK7JB.
Front left: Crosby Russell-Green, VK7CR.
Front right: Ted Cruise, VK7EJ.

operators had sent in information indicating the situation in most of the disaster areas via W.I.C.E.N. control to the Civil Defence Hq. and thence the Police Commissioner as head of the emergency operations. Communications were not established with Huonville on Feb. 7 as all roads into the area were impassable when our assistance was requested. W.I.C.E.N. Control and Civil Defence link (C.D. link) closed at approx. 0215 hrs.

All links and relays were operational again by 0900 hrs. on the 8th. Several 6 metre mobiles were on standby and several others active, in some cases in areas which had been lacking any communication for 24 hours. Many hours were wasted by three mobiles who were despatched to pinpoint a fire reported in the Carlton area in three separate bogus reports to the authorities who requested us to confirm or otherwise.



W.I.C.E.N. Control at the residence of VK7KC.
Lee Cordell, VK7KC, at the mike.

As fire relief centres were set up in the country centres, mobiles endeavoured to contact their organisers and transmit back any urgent food and clothing requirements they had.

Two mobiles with 6 and 80 metre equipment were set up in Huonville during the late afternoon and while Winston VK7WH was getting set up to relay on 6 after QRM from Amateurs outside VK7 had forced closure of the direct Huon-Hobart 3590 link, Terry VK7CT was passing distress traffic on 3590 per c.w. to VK2AGH who then relayed to W.I.C.E.N. Control VK7KC. Many thanks VK2AGH for your assistance on this occasion.

Very satisfactory 6 metre communication via Mt. Rumney relay to W.I.C.E.N. thence C.D. Hq. was established soon after this and a considerable amount of Police and general distress traffic passed. While this was going on further traffic was coming back through the Mt. Rumney link into W.I.C.E.N. Control from four mobiles in the Carlton to Tasman Peninsula area—the first news back into C.D. Hq. from there since the fires cut the telephone lines into the area.

All mobiles were recalled from their areas at 2225 hrs. and the Mt. Rumney link closed as soon as all units were

in direct communication with W.I.C.E.N. Control at 2300 hrs. Up until this time additional traffic was coming through Mt. Rumney from Mike VK7ZMC who set up a base station with his 6 metre mobile at the Woodbridge relief centre—this was the sole communication service available in the area south of Snug.

Also on the 8th, from 1100 to 1415 hrs., VK7ZZ was handling traffic to mainland VK for the Departments of Social Services and Labour and National Services, broadly concerned with damage and staff requirements.

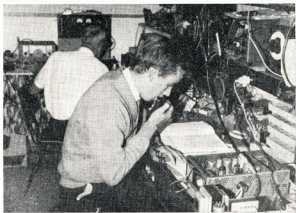
EXTRA RELAY STATION INSTALLED

The situation continued virtually unchanged on the 9th with the exception that to provide against overloading the 6 metre frequency at the Mt. Rumney relay site, at peak traffic periods an alternate 2 metre link from this site

motor driven generating plants. This h.f. link between Richmond and Colebrook was maintained until 1800 hrs. on 14th February.

By Saturday 1100 hrs. (i.e. 11th), this h.f. point to point link was integrated fully into the W.I.C.E.N. system with the installation of a complete station on Mt. Wellington by John VK7ZJG, assisted by VK7ZKJ, at the premises of TVT6 transmitter and we were fortunate to have been able to "borrow" quarters and 240v. a.c. from their emergency generating system. Our thanks are due to TVT6 for allowing us to use their facilities during this period.

This was set up a relay station capable of reception on any Amateur frequency up to 2 metres and capable of patching the received signal to W.I.C.E.N. Control and C.D. Hq. simultaneously on 6 and/or 2 metres merely at the flick of a switch.



Traffic being handled at W.I.C.E.N. Control.
Rear: Lee VK7KC; foreground: Ian (Associate).

to W.I.C.E.N. Control was installed, leaving 6 metres for use on inward traffic from mobiles to the relay station only. A second operator then put it down to W.I.C.E.N. Control via 2 metres. This, of course, doubled the traffic handling capability of the Mt. Rumney relay.

All v.h.f. distress traffic units and h.f. personal third party units closed by approximately 0100 on 10th February to allow the operators and gear to cool down for a few hours as traffic had slowed to a mere trickle at that time. All channels were again opened by approx. 0815 hrs. with an extra link, this time point to point via h.f. (3590 Kc.) between Richmond and Colebrook—again to be the sole communication link available. Units at both towns were also equipped with 6 metre mobile equipment which was used to relay via Mt. Rumney back to W.I.C.E.N. Control and C.D. Hq. when QRM or QRN prevented direct reception of 3590 Kc. traffic at W.I.C.E.N. Control. This meant virtually all the time in daylight hours as the h.f. equipment was QRP d.c. operated a.m. gear which was replaced as demand proved the necessity on 13th February by high power sideband transceivers on the 3590 Kc. channel powered by petrol

In view of the predicted high fire risk in Northern Tasmania, the Mt. Wellington link also established a link through to Mike VK7ZMC/M on Mt. Barrow in the north on 53.035 Mc. net frequency again with patch facilities available to W.I.C.E.N. or C.D., in case it became necessary to use it.

With the sophisticated monitoring and patch relay systems installed on Mt. Wellington, the relay on Mt. Rumney became largely redundant and was closed down, after being almost continuously manned for four days, at approx. 2000 hrs. on 11th. During this time almost all operation was on batteries as the 240v. a.c. supply was cut very early by fire on 7th. D.C.A. personnel did allow our operators to borrow 240v. a.c. from their emergency set on Mt. Rumney spasmodically.

MOBILE UNITS WITHDRAWN

By 1900 hours on the 12th, all mobile units had been withdrawn as their services were no longer required, but the portable units at Colebrook and Richmond were still very active with point to point traffic on h.f., with Richmond now having telephone facilities into Hobart at times. Mt. Wellington remained open until 1800 hours on 13th for relay from these stations should

telephones fail again, as was occurring frequently prior to this.

Thus things drew slowly to a close at 1800 hours on February 14 when all links were closed as services were largely restored and our assistance was no longer required, although an Army unit borrowed much of the equipment on Mt. Wellington for their use in a station they set up there.

Many questions arise at the conclusion of such an operation. Thanks are due to many. It appears to me to be a risky procedure to attempt to single out more individuals than has already been done, however the work of Lee and the team of very willing workers who assisted at W.I.C.E.N. Control (VK7KC) and of Lee's XYL who fed goodness knows how many people each day and put up with so many relative strangers in and around the home for a full week must be acknowledged with thanks.

The key to the entire operational success was the enthusiasm and selflessness of the operators and assistants of the 22 6 metre mobile stations used at some stage during the operation and who proved, for the first time, the extreme versatility and utility of 6 metre net operation in W.I.C.E.N. work, while the whole competence of the communications was rounded off by the support of the 10 or so h.f. mobile and portable stations which did such good work in providing fixed point to point services. The added 2 metre relay and patch facility boosted the total traffic capacity of the system by 100%. Backing the whole emergency operation were many Associate W.I.A. members and

even friends of Amateurs who assisted throughout as scribes and of course the h.f. home station operators throughout Australia who helped wherever they possibly could in every respect.

One hopes that the authorities will now realise and recognise, at least in some part, the high potential value of our mobile "fleet" when coupled with the normal fixed station network already in existence, during any state of civil emergency such as that just past.

LESSONS LEARNED

In retrospect, what did W.I.C.E.N. achieve and how fast once the situation became one of extreme emergency? Well quite spontaneously a 6 metre mobile net controlled first from the Fire Brigade Headquarters and later from near 7HT studios was operative within the hour of the state of emergency being proclaimed. Within a further 3 hours the 6 metre mobile network was under W.I.C.E.N. Control from VK7KC's establishment, using the call VK7ZKJ, and the whole system was integrated into supplying situation reports to Civil Defence Hq. by an h.f. (3590 Kc.) link from VK7KC to VK7EB. Civil Defence in turn had personnel and serviceable telephone outlets for distribution of traffic sent in by W.I.C.E.N. to their Hq.

The speed with which W.I.C.E.N. got so thoroughly organised was a tribute to those Amateurs concerned, and demonstrated once again the need for radio as a back up for line communications. Here the telephone proved to be extremely vulnerable under the circumstances.

What else did we learn as a result of our activity? First and foremost we found out that the v.h.f. mobiles, assisted by relay stations, could cover the entire disaster area for traffic or situation reporting and apart from the availability at very short notice of so many mobile units (approx. 25) around Hobart, the 53 Mc. net frequency was not subjected to QRM from fellow Amateurs not involved in the emergency. Further, that when backed up by 2 metre portable or mobile, a 6 metre relay station could really handle traffic by using one frequency for inward and one for outward traffic simultaneously.

What did we need? First and foremost direct telephone lines to both C.D. and Police Hq. from W.I.C.E.N. Control, to leave yet another channel clear (i.e. 3590 Kc.) for emergency traffic and as a standby channel should all traffic lines go out. Secondly, and most important, W.I.C.E.N. requires a permanent headquarters on perhaps W.I.A. property with permanent installations of v.h.f. and h.f. equipment; direct telephones as mentioned before; ample space to park up to 25 mobile units on standby; a substantial petrol dump (bulk), and a supply of four-gallon or thereabouts containers for mobiles' use; auxiliary generating set; several battery chargers, and sleeping and cooking accommodation for at least three operators.

Well that seems about the story as I saw it from the very early stages of the emergency and although I hope never to see another such emergency, the experience with W.I.C.E.N. was a most valuable one.

*AEGIS COILS

The QUALITY'S Wound In!



TOROIDAL Type

Illustrated is Aegis Type S105. A high efficiency converter transformer. Input 6v. or 12v. d.c. Output 150v. and 300v. at 45 watts peak. Many other designs available.



HEAVY GAUGE HONEYCOMB Type

Supplied in the range 0.5 H. to 10.0 H. for use in loudspeaker crossover networks and other heavy duty low resistance applications.



VINKOR Type

We manufacture and stock as standard lines all the Mullard-designed equaliser chokes and transformers for tape recorders, hi-fi tuners, etc., and are always pleased to quote for specials.



Available from all
good radio parts
stores.

Aegis Manufacturing Co. P./L.
347 Daresin Rd., Thornbury,
Victoria. Phone 49-1017.

A SYNTHETIC BATTERY FOR YOUR CARPHONE

(or how to make Transistor Regulated Power Supplies)

PART TWO

RODNEY CHAMPNESS,* VK3UG

AS promised, here is some information on a higher current rating 6 to 22 volt regulated power supply. The previous two supplies (described in Part One, "A.R.," Feb. 1967) could produce only up to 12 amps. and this only at an intermittent rating. The supply described in this article will put out 15 to 16 amps. quite comfortably for periods up to half an hour at a voltage output of 13.5 volts. and put out continuously 10 amps. At voltages higher than about 13.5v. the current available is reduced as the average voltage across C6 is reduced as the current increases and vice-versa.

The circuit in diagram one is very similar to the second supply in the previous article with a few circuitry changes. This supply is not capable of such high output voltages (22 volts max.) as the previous one, which will supply up to and slightly over 30 volts at low loads. This previous one is, therefore, possibly more suitable to supply power to quite a lot of mains-operated transistorised gear. These in many cases use in excess of 20 volts.

There are two pilot lights, one to indicate normal operation and the other to indicate an overload condition. The output transistors have been increased by one to four and there are two Ferris 7003 heat sinks with these transistors mounted on them. There are now two output controls, one is preset on 13.5 volts and the other is a variable coming out to the front panel.

* 14 Buckley St., Sale, Vic.

I have shown an amp. meter and a volt meter in the circuit; the amp. meter is possibly not essential, although handy; the volt meter I feel is quite essential if variable output voltage is to be used. It is not always convenient to use an external volt meter for this purpose. The variable voltage output control can, of course, be approximately calibrated and for most purposes would be quite adequate, so please yourself on this.

R19 is an additional resistance, fitted so that a 12 volt battery can be safely charged at a maximum rate of between 10 to 12 amps., which will automatically taper off to a trickle charge when the battery reaches full charge. This I think you will agree is a handy addition to the unit. R19 is a bit of a problem and about the only way out of it is to use four 1 ohm 10 watt resistors in parallel.

The continuous output current of the supply is limited to about 10 amps. (the rating of the transformer), although it supplies 15 amps. with no qualms. To boost the continuous output current rating, a 4 amp. 17 volt transformer of the type used in the smaller power supply in the previous article could be wired in parallel, so giving a continuous rating of 14 amps. The size of R19 could be reduced then to about 0.2 ohm, and would consist of five 1 ohm resistors in parallel.

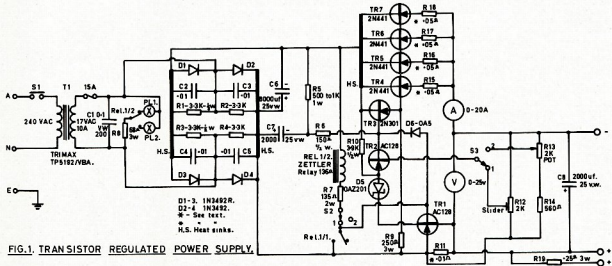
Now to charge a flat 12 volt battery to a terminal voltage of say 14 volts, at a maximum current of say 12 amps., we will need a resistance in series with

our flat battery to limit the current flow and charge rate, otherwise the overload circuits would most likely operate and the battery certainly would not charge. A flat battery should not be flatter than 11 volts. Now we have a 3 volt difference between the voltage of the supply and the battery, so a resistance is inserted between supply and battery to limit the maximum current. Using Ohms Law: $E \div I = R$, then $3 \text{ volts} \div 12 \text{ amps.} = 0.25 \text{ ohm}$. Therefore the series resistance is 0.25 ohm.

At the beginning of the charge the current is 12 amps., but when the battery reaches 12 volts the charge drops to 8 amps.; when the voltage rises to 13 volts the charge rate has dropped to 4 amps., and when the battery voltage has risen to 14 volts (the supply voltage) there is no charge although in actual fact there will be a small trickle charge. We now have a tapered-charge battery charger, and so the motto is "set it and forget it".

As can be seen, the circuit is virtually identical with the previous one. The main differences are in some component values due to the different voltages and currents put out. It would be quite possible to fit an additional 4 amp. transformer into the supply and I have left room in mine for this addition. All the outputs go to 2-pin polarised plugs.

I had said that I would possibly incorporate a more sophisticated overload circuit, but due to circumstances, mostly lack of time, I haven't developed



*R11—18 B. & S. enamelled copper, approx. 6 inches long. Adjust length for diode OA5 (D6) to conduct at pre-determined overload current between 15 and 18 amps.
*R15, R16, R17, R18—3 feet of 26 B. & S. enamelled copper wire.

S1—Mains off/on.
S2—Overload re-set: (1) normal, (2) re-set.
S3—Output volts: (1) pre-set volts (13.5v.), (2) variable volts.

When overload occurs, Zettler relay pulls in and changes over pilot lamps attached to Rel. 1/2, and clamps output volts to virtually zero.

these circuits. Diagram 2 will give the general idea of the circuit I had intended trying. TR1 is still the overload control transistor but in its collector lead is just resistor R23 instead of the relay and R7. Until D6 commences conduction, TR8 and TR9 are cut-off. When D6 conducts, current flows through R20 and the voltage drop across R20 causes TR8 to conduct.

In the collector lead of TR8 is a resistor (R21) which will also have a potential difference across it. This voltage is applied to a CR network consisting of R22 and C9. Should an overload occur, C9 will charge up to 63% of the voltage across R21 in about 3 seconds, and TR9 will gradually commence conduction during this three seconds and about this time the collector current will have risen sufficiently high to pull the overload relay in. So with an overload only extending for a couple of seconds or so, the overload relay won't pull in, so saving having to re-set.

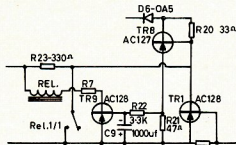


FIG. 2. OVERLOAD CIRCUIT.

Another advantage I can see is that the overload operation of TR1 is amplified by TR8, giving a much sharper overload cut-off characteristic as indicated by my simple graph in Diagram 3. Of course this overload circuit may not work as well as I feel it should, but it is a starting point for experiments. I have seen much more complicated circuits for supplies of this type, using about twice as many transistors as I would suggest and a lot more complication. Note that TR8 is an NPN transistor. I have also been giving some thought to an automatically re-setting overload circuit but have not got to the stage of being able to draw up working circuits.

The emitter resistors of TR4 to 7 are 3 feet of 26 B. & S. enamelled copper wire, and the resistor R11 consists of a few inches, about 6 to 8 inches, of 18 B. & S. enamelled copper wire. The length of this is adjusted until D6 just commences to conduct at the overload point, which in the case of this supply is between 16 to 18 amps. For the fuse holder, don't use a panel mounting type, as I did, or you may find after high current has been drawn for a while that the ends of the fuse melt and boy, you are in trouble. I'm using a screw terminal board with two lugs as my fuse holder.

I feel I may have been in error in my previous article with my supposition as to why equalising capacitors and resistors are necessary across series

connected silicon diodes. I feel the following explanation is nearer the truth.

When the diodes are in the non-conducting state they act as small capacitors. Now say one diode has an effective capacity of 90 pF, and the second in a two-diode train has a capacity of 10 pF. The p.i.v. of each is say 60 volts and the total theoretical p.i.v. is 120 volts. We apply a source of voltage which will give a p.i.v. of 100 volts. The diodes are safe—or are they? No, because the p.i.v. will distribute in inverse proportion to the capacity, therefore we have 90 volts across the 10 pF diode and 10 volts across the 90 pF diode. Puff goes number one through excess volts; when it's gone, puff goes number two, as it will probably have to take the whole load. Sounds a lot more feasible than my other explanation. The quoted capacities are not necessarily correct, they are just to illustrate the point.

Another possible explanation I have heard of is that the leakage current across the diodes in the non-conducting state causes the p.i.v. across the diodes to be unequal, so which is actually correct I'm not really sure. Perhaps someone with more knowhow on diodes may be able to enlighten us all, but in the meantime fit the equalising capacitors and resistors to be on the safe side.

Well that is about the lot for this article. I am hoping to write a further article on an a.c. supply for the 122 set. This will include a simpler transistor regulated 12 volt d.c. supply as well as a normal h.t. supply. At the moment I anticipate it will only use one transistor.

I hope that these two articles on transistor regulated supplies have been a starter for those who have always wanted a replacement for the lead-acid accumulator. The ripple at full load with the supply described is between 25 millivolts and 50 millivolts.

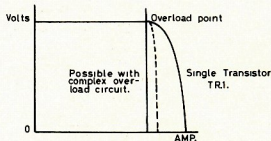


FIG. 3. POSSIBLE OVERLOAD CHARACTERISTIC OF VARIOUS OVERLOAD CIRCUITS.

"SUPERGAIN" ANTENNAE

One of the perennial dreams of most Hams is a high-gain antenna occupying practically no space—something that will give lots and lots of decibels but be no more cumbersome than a weathervane. During the past several years, the theory of such antennae has been pretty well worked out and it is now established theoretically that any desired degree of directivity can be obtained in an antenna array less than a half wavelength long. Antennae of this sort have been termed "supergain" arrays.

No one has built such an antenna. Furthermore, it appears that no one ever will. The painful practical fact is that, considering an array of given small over-all dimensions, increasing the directivity and gain decreases the radiation resistance at a tremendous rate so that the antenna efficiency goes down very much faster than the gain goes up. In addition, the spacing between elements and phasing and amplitude distribution of the currents in them becomes impossibly critical.

A paper in the Proceedings of the I.R.E. (N. Yaru, "A Note on Super-Gain Antenna Arrays," Proceedings of the I.R.E., Vol. 39, No. 9/8/51) treats quantitatively a particular type of array, one having a number of half-wave

elements in broadside with the array length limited to one-quarter wavelength, and comes out with some astonishing answers. With the proper current distribution between elements in each case, the power gain over a single element is almost the same as the number of elements, e.g. with five elements the power gain is approximately 5, with 9 elements the gain is nearly 9, etc., and presumably would continue to increase in the same fashion beyond the nine elements which represent the limit of the author's curves. These gains are not especially high as compared with larger antennae, but it should be noted that the broadside case considered is probably not the most favorable one for small dimensions.

From the practical standpoint, the significant thing is that the analysis shows each element of a 9-element array would have to carry a current of about 14 million amperes in order to produce a field strength, at a distant point, in the most favorable direction, equal to the field produced by a current of 19.5 milliamperes in one element alone! Practically speaking, of course, such a tremendous current would be an absurdity. Further data is given based on the calculated ohmic losses

(Continued on Page 15)

A "CORNER" ANTENNA FOR 7 Mc.

WAL SALMON,* VK2SA

THE success of the "corner" series phased array described by the author in "Amateur Radio," in October 1966 prompted him to think in terms of a "corner" antenna for 7 Mc., with possible harmonic relationship on 14 Mc. A number of letters were received by the author in connection with the article and several Amateurs asked for details of an antenna for 7 Mc.

The author has always held the view that it is most desirable to endeavour to get some added gain in the desired direction when planning a wire antenna and so far as 7 Mc. is concerned, the ordinary Ham living on a suburban lot cannot think in terms of Yagis or Quads for 7 Mc.

However, the shortened centre loaded dipole will fulfill most requirements so far as directivity and DX is concerned on 7 Mc. and such an antenna to fill the bill has been constructed at VK2SA and was erected on 9th October, 1966, as a vertical series array, and on 11th October was re-erected as a "corner" antenna on the 52-foot mast at VK2SA.

The antenna consists of two centre loaded dipoles fed with open wire line and spaced 20 feet apart at the dipole centres. The phasing stub is inductively loaded with 14 turns of 16 gauge enamel wire in each leg, both being wound side by side on a $1\frac{1}{2}$ " plastic tube (see Fig. 3). Before connection to the antenna, the stub is shorted at

one end and the free ends snipped until the g.d.o. dips at 7 Mc. The total length of the stub was then 20 feet.

The reader might ask why the stub was shortened by inductive loading. The reason was due to the fact that in order to design the "corner" antenna to fit in with space available, a scale diagram of 10 feet to 1 inch was drawn and the dipoles came out at 42 feet each and the stub 20 feet, so there are

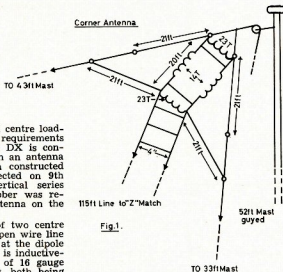


Fig. 1.

now no worries about the 67-foot deal for 7 Mc.

The dipoles were then constructed and it was found that for a wire of 21 feet each side of the coil former, a close spaced coil of 23 turns $1\frac{1}{2}$ " diameter was necessary and both dipoles were dipped at 7 Mc. before connection to the stub and feed line.

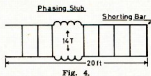


Fig. 4.

Fig. 1 shows the "corner" antenna as erected at VK2SA. Fig. 2 illustrates the centre loading coil in each dipole, and Fig. 3 shows the electrical shortening coils for the 20-foot stubs.

The stub should be dipped at 7 Mc. with one end shorted as shown in Fig. 4. On 7 Mc. the s.w.r. is 1.1 to 1, and on 14 Mc. from 1.3 to 1.5 to 1.

Using the antenna in the favoured direction of North East, S8 reports have been received from W land on s.s.b. and c.w., and s.s.b. S7 from Japan, all on 7 Mc. On 14 Mc. an s.s.b. S8 to S9 report from YV5, S7 from W, S6 from T12. All reports were over a three-day period commencing 11th October, 1966.

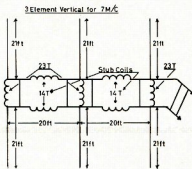


Fig. 5.

Ever heard of a three element vertical for 7 Mc.? I tried the two element for one day, but if you want to give your friends overseas something to think about, turn to Fig. 5. Just hang it from a wire broken with insulators about 45 feet high. If you really want to go to town and do the thing properly, why not use the stub line as the horizontal support between two masts and let the thing hang down in the form of three driven inverted vee antennae for 7 Mc.

Give me a call some time and let me hear the noisy brute!



Fig. 2.—Centre loading coil in each dipole.

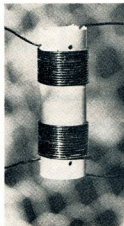
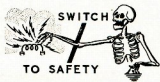


Fig. 3.—Shortening coils for 20-ft. stubs.





WARBURTON FRANKI

Extra Special BARGAINS

POTENTIOMETERS

DUCON:

500K, tap 40K, and d.p.
s.t. push-pull switch.
40c plus S/T 25%.

DUCON:

500K Log $1\frac{1}{2}$ " shaft with
slot.
500K Log $1\frac{1}{2}$ " shaft w/slot.
1 meg. Log $1\frac{1}{2}$ " shaft.
15c plus S/T 25%.

TAB POTS

Less shaft, 100K linear.
10c plus S/T 25%.

M.S.P.:

10K Log s.p.s.t. switch.

L.R.C.:

500K Log d.p.s.t. switch
(short shaft).
25c plus S/T 25%.

L.R.C. large type $1\frac{1}{2}$ " dia.:

500K w/tap 40K and d.p.
s.t. switch.
500K with d.p.s.t. switch.
30c plus S/T 25%.

Pack and Post 5c each
or 25c dozen.

TRANSFORMERS A & R TYPE 1960

Primary: 10-0-200-220-240-260v.

Secondary: 190v. tapped at 170v. at 100 mA.; 55v. at
10 mA.; 12v.-0-12v. at 130 mA.; 6.3v. at 4a.; 6.3v.
at 4a.

Grey metal case with solder terminals; originally made
for D.C.A.

\$3.00 plus S/T 12½% + Pack and Post 50c.

AUDIO TRANSFORMERS

A & R TYPE 2713

Primary: 12,000 ohms p.p.

Secondary: (1) 150 ohms, (2) 150 ohms. Total 3 watts.

50c plus S/T 25% + Pack and Post 10c.

TRANSISTOR TRANSFORMERS

A & R TYPE 2675

Primary: 25 ohms.

Secondary: 150 ohms at 5 watts, with feedback winding.
Originally for outside broadcast use—response 30 c.p.s.
to 15 Kc.

50c plus S/T 25% + Pack and Post 20c.

SPEAKER TRANSFORMERS

A & R TYPE 2655

Primary: 5,000 ohms s.e.

Secondary: 33 ohms (similar to E Type Rola).

25c plus S/T 25% + Pack and Post 10c.

TRANSISTOR TRANSFORMERS

Rola Type LDR43. 4300/600 ohms c.t.

25c plus S/T 25% + Pack and Post 5c.

CHOKES A & R TYPE 3052

1 Henry at 80 mA. D.C. resistance 30 ohms.

25c plus S/T 25% + Pack and Post 10c.

LIMITED QUANTITIES

TRANSFORMERS

240v. primary, 18-20-22v. secondary at 4 amps. Mounted
on panel with three position selector switch. Suitable
for battery chargers, etc.

\$2.25 plus S/T 12½% + Pack and Post 50c.

Contact Cooled Rectifiers LT91

Rated at 2 amp. Use two in parallel with above
transformer.

\$3.00 pair + S/T 12½%, post free.

BUY BOTH—SAVE MORE!

Buy a transformer and a pair of rectifiers at the Special
Price of—

\$4.50 plus S/T 12½% + Pack and Post 50c.

AUDIO AMPLIFIER MODULES

Four-Transistor—1 watt output.

High impedance input—100K ohms.

Low impedance input—1K ohms.

Output impedance—4, 8 or 16 ohms.

Power source—6 volts.

Gain: 70 db.

Size of board— $4\frac{1}{2}$ " x 2" approximately.

Supplied with circuit and wiring instructions.

\$7.50 plus S/T 12½% + Pack and Post 20c.

50 ASSORTED COMPONENTS

Including resistors, mica condensers, tubular condensers,
styrofoam condensers, grommets, transistor transformer
and potentiometer. Ask for Polypac No. 8.

80c plus S/T 25% + Pack and Post 10c.

50 ASSORTED DUCON AND U.C.C. TUBULAR CONDENSERS

Ask for Polypac No. 9.

80c plus S/T 25% + Pack and Post 10c.



WARBURTON FRANKI

220 PARK ST. SOUTH MELB., VIC. PHONE 30 lines 69-0151



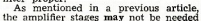
OPEN SAT.
MORNING

Please include
postage or
freight with
all orders

AN EXPERIMENTAL SIDEBAND EXCITER

K. A. KIMBERLEY,* VK2PY

The crystals could be mounted in special sockets or metal valve sockets, however these also cost money so I used the hint as shown on the front cover of a back issue of "A.R." (Oct. 1963).



in a straight exciter. However, as they could be required for receiving, it was decided that it would be easier to install them now than later. The gain requirements here are low, so it could be wiser to connect the transistors in common base rather than common emitter. This circuit configuration has a lower gain and hence reduces the chance of "take off".

The components used are:—

Resistors— $\frac{1}{2}$ watt 20%.

Capacitors—All 0.1 uF. are 25v. ceramic (Ducon Redcaps).

330 pF. are 5% 125v. styro-seals.

2.2 pF. are ceramic NPO discs.

Cx gimmicks (approx. 1 to 3 pF.).

Transformers—Wound on Ducon i.f. transformer assemblies.

Transistors—PNP germanium types, similar to OC45, etc.

Base Board—1/16" laminex or bakelite, drilled and eyeleted as required.

Crystals—Two digit series as per text.

The crystals used at VK2PY are of the two digit series and centered around 417 Kc. Crystals at other frequencies would be equally suited provided that the tuning capacitors across the i.f. transformers were altered accordingly. Unfortunately, the use of crystals one channel apart results in the bandwidth being too narrow and, of course, as "Finnagle" would have it, two channels apart the filter is too wide with a nasty dip in the middle.

This leaves us with several alternatives:—

- (1) Make do with a narrow filter.
- (2) Use crystals from the three digit series conjointly with those of the two digit series.
- (3) Adjust the frequencies of my existing two digit series.
- (4) Purchase a mechanical filter?

Again my "Scotch blood" came to the fore, thereby making alternative number 3 an automatic choice. Later I was pleased with this solution as it enabled me to learn something about shifting crystal frequencies. A short description of this will be found later in the article.

ALIGNMENT

The following procedure is included for those Amateurs who do not have a sweep generator. Those fellows who have one will need no instruction from me in the use of their own equipment. I found mine invaluable and would not now dream of aligning any receiver without it.

The following items will be necessary:—

- (1) Bandsread stable oscillator.
 - (2) Suitable detector.
- It would be highly desirable to have:—
- (3) C.r.o.
 - (4) Sweep generator.

If you do not have access to (3) and (4) then you will most certainly need:

- (5) Patience.
- (6) Perseverance.

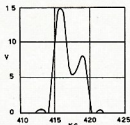
Some comments and constructional ideas will be given regarding items (1), (2), (3) and (4) at the end of this article.

Proceed as follows: Connect the detector at the output of the filter. Set generator to the mid frequency of crystals 1 and 2 and connect to the top of T5. Keeping detector set on most sensitive range, adjust generator output to give small reading. Peak T6, reducing generator output if necessary. Move generator to T4 and peak T5 in a like manner. Proceed backwards towards the input as if aligning a receiver. Beware of overload as this condition can make the pass band curve appear to be far over the top.

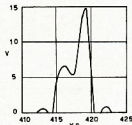
We now have to obtain some idea of the pass band curve. Of course if you have a sweep generator this exercise will be a piece of cake, however failing the ownership of same, proceed as follows: Rock your signal generator backwards and forwards over a range of about ± 5 Kc. from the expected centre frequency of your filter. Whilst doing this keep a sharp eye on the girations of the null detector meter. At this stage don't be alarmed at the variations in meter readings. Remember that a reading equal to half of the peak voltage reading represents a loss of only 6 db.

The reader will be surprised how quickly a mental picture of the pass band shape is built up in the mind. Most probably it will look something like those pictured herewith. Figs. 4A and 4B indicate that you have not aligned the i.f.s at the correct centre frequency. Note the exaggerated peaks corresponding with (Fig. 4A) the lower frequency crystal and (Fig. 4B) the higher frequency crystal. If you are lucky and have correctly picked the centre frequency, Fig. 4C will be produced, but could have large or small "pop ups" (side lobes). Remember that these curves are voltage versus frequency and will look a whole lot worse than curves expressed in db.

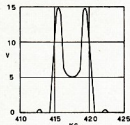
Having so far given a fair exhibition of your patience, you will now need to bring your perseverance to the fore. Disconnect filter No. 1 and feed signal into the base of the second transistor via the 0.1 uF. capacitor. Whilst still rocking and watching carefully, re-adjust T4 and T5 until the pass band looks something like those shown in Figs. 5A, 5B or 5C. Having finally succeeded in making the two peaks symmetrical, I would strongly advise



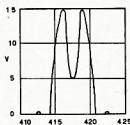
T4 & T5
TRANSFORMERS TUNED BELOW
ACTUAL CENTRE FREQUENCY
FIG. 4A



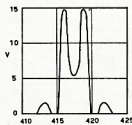
T4 & T5
TRANSFORMERS TUNED ABOVE
ACTUAL CENTRE FREQUENCY
FIG. 4B



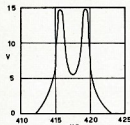
T4 & T5
TRANSFORMERS CORRECTLY TUNED
(NOT T6)
FIG. 4C



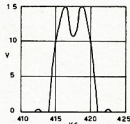
T6 INCORRECTLY ADJUSTED
CX OK
FIG. 5A



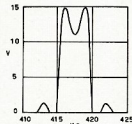
T6 INCORRECTLY ADJUSTED
CX TOO LARGE
FIG. 5B



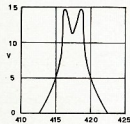
T6 INCORRECTLY ADJUSTED
CX NIL
FIG. 5C



T6 OK
CX CORRECT
FIG. 6A



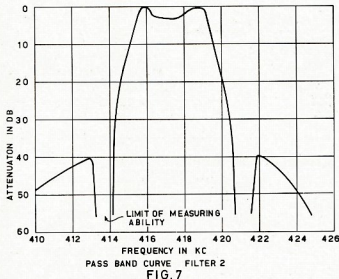
T6 OK
CX TOO LARGE
FIG. 6B



T6 OK
CX NIL
FIG. 6C

the constructor to give it away for a while. Have a beer and a smoke or even a cup of coffee or some other kind of relaxation.

When fully refreshed, it is time to tackle T6 and this should be adjusted with even more care than any of the previous adjustments. Very small changes in tuning are all that is necessary here. Dramatic changes in the pass band curve will be observed during the adjustment. If an excessive peak becomes evident on either edge of the curve, a slight fiddle with cores in T4, T5 and T6 will soon put things right. In other words you will probably gather that there is a little interaction between adjustments. Eventually everything comes good and the curve should look something like those shown in Figs. 6A, 6B and 6C. The middle dip should be about 0.53 of the peak reading, corresponding to -1.6 db or better, but should not be deeper than 0.79 (-2.0 db).



Please Note that these curves have been exaggerated somewhat to show more clearly how Cx controls the "pop ups" as well as the steepness of the sides. Generally more Cx increases the level of the "pop ups" and at the same time the sides of the filter become steeper.

It is now advisable to draw an accurate curve with the attenuation in db. Fig. 7 is the actual pass band curve of my filter No. 2. Commence by adjusting the detector so that it reads full scale at the peak of the pass band curve and call this the 0 db ref. point. Slowly move generator frequency until the detector output meter now reads 0.71 of full scale and note frequency. Mark this in on your graph as the -3 db point. Continue the frequency shift in same direction until the meter now reads half scale. This is the -6 db point for your curve. Likewise, 0.31 f.s.d. = -10 db, and 0.1 f.s.d. = -20 db. At this point it is wise to change the detector to a range that is 10 times more sensitive than the previous scale

in use. Full scale here is -20 db, $0.31 = -30$ db, and $0.1 = -40$ db on this scale. From the -40 db point on, measurements become somewhat difficult, however they are not really important. The 0.05 f.s.d. is at -46 db, then guess at 0.01 f.s.d. as this equals -60 db.

So much for the main lobe, keep on with the frequency shift and you will find that the meter reading will show a minor increase. This is a "pop up" and should not be more than 0.15 f.s.d. on the second scale (-36 db). Follow the same procedure for the side of the curve. If intermediate values are required for your curve, the formula to be used for calculating them is:—

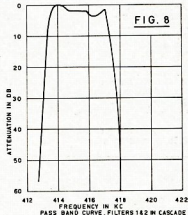
$$db = 20 \log_{10} \frac{E_1}{E_2}$$

where E_1 is the full scale reading that you set as your zero ref. point.

If the curve is unsatisfactory a slight titivation of the cores should correct

be okay as the attenuation figures add arithmetically, i.e. the "pop ups" will be down a total of 60 to 70 db. That's a ratio of 1,000:1 or so!

Well chaps, the foregoing certainly sounds labourious as indeed the filter alignment, without a sweep, actually is. For those without the patience or, who cannot obtain the necessary crystals, do not overlook the idea of completing the exciter by the use of a mechanical filter.



There are many suitable mechanical filters on the Australian market and because of their small size as well as electrical parameters should be ideal.

Best of luck and good fun.

SALES POSITION OPPORTUNITY

Amalgamated Wireless Valve Coy. Pty. Ltd., Rydalmere, N.S.W., has a vacancy in the Sales Department and would welcome hearing from those interested.

The Company's product range is among the most comprehensive available in the active electronic device field and is continually increasing.

The position offered entails corresponding with customers and suppliers, also telephone quoting and written tendering.

Would those interested please submit a written application stating particulars of previous experience or qualifications, current position and salary, age, etc., addressed to:—

The Sales Manager,
Amalgamated Wireless Valve
Coy. Pty. Ltd.,
348 Victoria Road,
Rydalmere, N.S.W.

matters. When everything is okay give filter number 1 the same treatment. This should be a "piece of cake," having been awarded your "Hoppy Badge" for the successful completion of filter 2 alignment.

When both filters are behaving in the required manner, connect them in cascade. More than likely T3 will need some slight re-adjustment. Probably this is due to the fact that the input impedance of transistor 2 differs from that of the detector.

At this stage prepare a pass band curve with the two filters in cascade. Provided the dip in the middle of the pass band has been kept to less than 2 db, the combined dip will be less than 4 db. This is quite satisfactory and the response curve will be similar to mine (see Fig. 8). If the filter is made about 500 c.p.s. narrower than the author's, the centre dip will be almost eliminated.

Note: Don't be overworried if the "pop ups" in each filter are at only -30 to -35 db. The result will still

TRANSISTORISED B.F.O.

The b.f.o. circuit shown here can be used in new equipment, or as an add-on unit to an existing unit. Its main advantage is that no variable capacitor, as such, is used for tuning. Instead, the change in base-collector junction capacitance due to variations in the collector-base voltage is utilised, thus enabling a potentiometer to be used as the tuning control.

As there is only d.c. on the leads to the potentiometer, the oscillator may be fitted anywhere on the chassis, with long leads to the front panel causing no problem. In cases where it is desired to fit it in an existing unit, quite often an existing potentiometer, e.g. audio gain control, can be replaced by a dual concentric potentiometer in the same mounting hole. If it is required, a potentiometer with on/off switch can be used, the switch being used for b.f.o. on/off.

It might be pointed out that the 2N708 transistor was used as it was

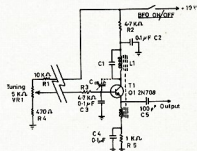
the first out of the junk box. In point of fact, the poorer quality germanium transistors exhibit a greater tuning range due to their higher initial junction capacitance, however ± 3 Kc. were obtainable very easily at 500 Kc. using the 2N708. About the only real re-

quirement is that the transistor chosen will oscillate at the frequency being used. The output amplitude remains constant over the tuning range. Frequency stability is reasonable, excessive ambient temperature causing an increase in leakage current, being the main cause of drift.

The operation of the circuit is fairly simple. Feedback from collector to emitter via the tuned i.f. transformer causes oscillation, the frequency being determined by the value of L1, C1 and C2, which is effectively in parallel with C1. As VR1 is varied, the change in base voltage causes a change in base current, and consequently a change in the collector current. The change in collector current through series resistor R2 causes a change in collector voltage, and, as pointed out earlier, a subsequent change in the junction capacitance Ccs, similar in fact to the operation of a varactor diode.

Further details of this effect can be found in G.E. Transistor Manual, 7th edition, pages 20 and 21, 65.

—Douglas W. Rickard, VK2ZDI



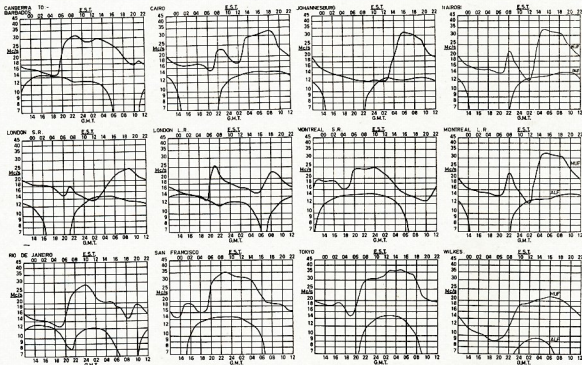
- Q1—2N708 or any transistor similar.
T1—L.F. Transformer, e.g. 455 Kc. (transistor type). May include C1.
VR1—10K ohm potentiometer.
R1—10K ohm, 1/4w.
R2—47K ohm, 1/4w.
R3—47K ohm, 1/4w.
R4—470 ohm, 1/4w.
R5—1K ohm, 1/4w.
C1—May be part of T1.
C2—0.1 uF. paper.
C3—0.1 uF. paper.
C4—0.1 uF. paper.
C5—100 pF. mica.



AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—
SO SHOULD A LOT MORE
AMATEURS!

PREDICTION CHARTS FOR APRIL 1967



(Prediction Charts by courtesy of Ionospheric Prediction Service)

SIDE BAND

Sub-Editor: PHIL WILLIAMS, VK5NN

NEW CALL SIGNS

DECEMBER 1966

VK1IL—B. G. Bell, 53 Valley Cres., Campbell.
VK1JF—J. G. Fricke, 27 Poynton St., Hughes.
VK1WT—W. R. Taylor, 13 White Cres., Campbell.
VK1ZAN—R. C. Elliott, 37 Ingalls St., Garra.
VK2RY—A. A. R. Hennessy, 23A New Illawarra Rd., Bexley North.
VK2AIW—A. H. Wass, 1 Cannons Pde., Forster.
VK2AKR—K. W. Riding, 70 Alexandra St., Drummond.
VK2BA—R. J. Mildas, 33 Plateau Rd., Springwood.
VK2BDF—D. Freeman, 13 MacNamara Ave., Concord.
VK2BGL—G. Lestheim, 2/31 Arcadia St., Coogee.
VK2BHF—J. J. Freeman, 20 Nymbiada St., South Coogee.
VK2BNF—N. V. Finnerty, G.P.O. Hotel, Bradley St. Cooma.
VK2BPG—P. Grosser, 44 Cabbage Tree Lane, Fairymead.
VK2BRL—R. F. A. Lopez, 49 Desborough St., St. Marys.
VK2BSS—North Shore Radio Club, C/o. 11 Ruby St., Mosman.
VK2ZG—B. J. Hibberd, 31 Makim St., Dee Why.
VK2ZGY—R. H. Glover, 20 Saltash St., Yagoona.
VK2ZLP—L. M. Price, 253 Lakemba St., Lakemba.
VK2ZQB—J. C. Bedford, Station: 13 Cumberland St., Terahs; Postal: C/o. Mrs. W. Smith, Carrington St., Singleton.
VK2ZSU—J. F. Sutcliffe, Station: Mobile; Postal: P.O. Box 130, Darroton.
VK2ZV—P. L. Cearn, 8 Scarborough St., Kogarah.
VK3EL—G. J. Marcon, 26 Darling St., Moonee Ponds.
VK3QQ—B. H. Roark, 50 Churchill St. Mont Albert.
VK3AE—J. M. Barry, Station: Portable; Postal: C/o. C.R.A.E., 85 Collins St., Melbourne.
VK3AV—Royal Victorian Institute for the Blind and Box Hill Boy Scout Group, Burwood Rd., Burwood.
VK3ZVQ—J. D. Patterson, 33 Calembeena Ave., Oakleigh.
VK3ZVD—D. Chick, 15 Vida St., Essendon.
VK3ZUW—J. O. Lascaris, 1 Naria Crt., Glen Waverley.
VK3ZVZ—A. B. Duck, 24 Mail Crt., North Blackburn.
VK3ZXW—G. A. G. Williams, 21 Wilkinson St., Ringwood.
VK3ZYB—M. W. Alsop, 3 Menin Rd., Nunawading.
VK3ZV—R. R. Goodwin, Postal: P.O. Box 51, Kaniva.
VK4MK—M. T. K. Power, 9 Railway St., Buranda.
VK4WN—J. G. Willis, 208 Wardell St., Enoggera.
VK4ZT—N. Sandford, 18 Loch St., Too-womba.
VK4ZCW—C. W. Brooke, 13 Simla St., Too-womba.
VK4ZEV—J. F. Fitzherbert, Station: Portable; Postal: Radio Section, 10 Sqn. R.A.A.F. Townsville.
VK4ZV—R. G. Elkin, Station: Portable; Postal: 16 Crofton St., Bundaberg.
VK5TP—J. Gordon, 7 Rawlings Ave., Torrensburg.
VK6TU—K. Kitchen, Station: 46 Green Ave., Turst Hill; Postal: 52 Railway Pde., Midland.
VK6ZPK—R. K. Pether, Lot 12, Hutton St., Osborne Park.
VK7LS—L. A. Cooper, Berriedale Rd., Berriedale.
VK7ZRD—R. L. Davis, 746 Sandy Bay, Sandy Bay.
VK8BJ—D. Griffiths, Station: Portable; Postal: C/o. Mr. A. Smith, 148 York-ton Rd., Elizabeth.
VK8JG—J. Lill, O.T.C. Cable Station, Madang.
VK8PV—P. Nante, Station: Angau Dr., Boroko; Postal: C/o. D.C.A., P.O. Box 80, Port Moresby.
VK9SS—J. Styer, Lot 2, Section 4, Minihl Ave., Moroko.

The notes this month will be not very technical, as time for the necessary research has not been available. Instead, I shall quote some items of interest from my reading of overseas periodicals, all relevant on the sideband scene.

ANOTHER U.K. TRANSCEIVER

One transceiver which I did not mention in my review of the salient features of these items 15 months ago was the "Anglian 100" made by Light Electro-Developments Ltd., in Suffolk, England. This has been modified recently to increase its power output to the 400 watts p.e.p. allowed by the British licence.

The equipment uses the 2.1 kc. mechanical filter for sideband generation at 455 kc. Frequency coverage of 500 kc. per band on two selectable v.f.o.s in the same slide-rail dial permits transceive with U.S. stations operating on different segments of the bands. There are eight half-megacycle sections, the lowest 1.5 to 2.0, and the highest 29.0-29.5 Mc. For c.w. men a half-lattice filter is added for improved selectivity on "receive".

The p.a. has four valves, type TT21, in parallel. These are the transmitting version of the audio tube, the KT88, so popular with the bass-guitar crew in the amplifiers they use to wrench voice coils off the woofer speaker cones. The box is 15" x 8" x 15" of wrap around case construction, a la Collins, with a matching power unit 8" x 8" x 15". This description was condensed from the "R.S.G.B. Bulletin" for December 1966 if you want to read more.

These descriptions are valuable for ideas for home constructors, and I must admit to having second thoughts about a few items for incorporation in my long-minded project, the transistorised s.s.b. transceiver.

FIELD-EFFECT TRANSISTORS

Following on the success of that little handful of receiver, the "Daveo," recently reviewed in the American magazines, there are several small receivers under construction in this country. Small prefabricated modules are available. There is a beautiful little 3 watt audio amplifier little larger than a matchbox which feeds an 8 ohm speaker directly, and is ideal for the project. Integrated circuits—all moulded into the one chip will give all the gain you can use after the main filter, in one stage at 455 kc., and perhaps two stages, gain controlled, at 9.0 Mc. For the front end of the receiver there are quite a number of field-effect transistors suitable for use up to 30 Mc. with minimum cross-modulation with quite strong local signals. With a strong b.c. station (50 kW.) just over my back

fence, the use of transistors requires more than normal selectivity in the input circuits.

A little over a year ago, imported FET's were more expensive than many of us care to contemplate, but now some audio types are available very reasonably in this country. This has had the affect of increasing the duty on imported v.h.f. types which are not, as yet, available from Australian sources. The "customs" should learn to distinguish between various types and applications of equipment.

One can only hope that some v.h.f. type FET's are soon available locally from those who are "protected" by the higher duty rates. The situation should then "right" itself as far as we poor experimenters are concerned.

A FIELD-EFFECT VALVE

"CQ" magazine draws attention to the development of this device by (I think) Amperex in U.S.A. It is obviously in the experimental stage only, but has extremely high power sensitivity and linearity, so with a few hundred milliwatts from a fully transistorised exciter it should be possible to produce a high p.e.p. output of s.s.b. in the single tube amplifier.

I am awaiting more news of this one with anticipation. The very high-powered transistors are not yet, it seems, for Amateurs, except for the lucky ones who have access to the "just outside" rejects. Too much optimism may be unwise, for the price of the F.E. valve may be a shock to the system.

HEATER/CATHODE EMISSION

We have used oxide cathodes in valves for as long as I can remember, back around 1930. These were a considerable improvement on previous emitters, and more easily managed than even modern thiovalent tungsten emitters in modern tubes. In the Jan. 1967 issue of the "Scientific American" magazine there is a reference on page 59 to work done to improve the emission of cathodes. This refers briefly to the development from fundamental principles, of the dispenser-type cathode, in which the necessary barium is not contained in the surface oxide layer, but in a chamber with a porous tungsten "lid". This separates the emitting surface from the barium, resulting in higher emission at lower temperatures and much longer life of the emitter.

Figures of up to 40 amperes per square centimeter are quoted, with a life of 100,000 hours at 1 ampere per sq. cm. Since high peak emission is one of the features required for linear amplifier valves for s.s.b. p.a. stages, we can look forward to some interesting developments.



FOSTER DYNAMIC MICROPHONES

SPECIFICATIONS:

Output Impedance 50 ohms or 50K ohms
 Effective output level .. -55 db. [0 db. — (one) 1V. Microbar]
 Frequency response 50 to 15,000 c.p.s.

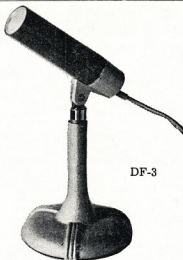
OMNI-DIRECTIONAL DYNAMIC:

Plastic Diaphragm. Swivel fits 5/8" 26 t.p.i. Stands.
 Size: 4½" long, 1½" diameter. Colour: TWO-TONE GREY.
 Cable: 12 ft. of P.V.C.

Retail Price 50K ohms: £4/16/0 + Sales Tax 10/0

Retail Price 50 ohms: £4/14/0 + Sales Tax 9/10

A QUALITY PRODUCT FOR TAPE RECORDERS & P.A. USERS



DF-3



Marketed by **ZEPHYR PRODUCTS PTY. LTD.**
 70 BATESFORD STREET, CHADSTONE, S.E.10, VIC.

Manufacturers of Radio and Electrical Equipment and Components

Agents: D. K. Northover & Co.; Neil Muller Ltd.; Homecrafts (Tas.) P/L; Jacoby, Mitchell & Co. P/L; T. H. Martin P/L.

NON-DESTRUCTIVE

INSULATION TESTING WITH THE TRIMAX IONISATION TESTER



The TRIMAX Ionisation Tester was developed as a means of testing insulation resistance and the onset of ionisation at any voltage from 50-10,000 V.D.C. The testing is non-destructive and the instrument itself is completely safe to the operator. Call our Sales Department for details on the TRIMAX Ionisation Tester.

METER RANGES
 0-1000/10000 Volts
 0-2/20/200 Microamps



LM ERICSSON LTD.

"TRIMAX" DIVISION

FACTORY CNR. WILLIAMS RD. & CHARLES ST., NORTH COBURG, VICTORIA. 'PHONE: 25-1202 ... TELEGRAPHIC ADDRESS: "TRIMAX" MELB.



LIGHT WAVE DX?*

JIM SINCLAIR, VK5ZSJ

A VK2 IN W-LAND

Having long had a desire to visit the U.S.A., on July 30 last I took advantage of a discount fare and Qantas Boeing VIEBEX started me from San Francisco at 800 m.p.h. My first Ham QSO (VKOEFG) was made on 1st April, which means I'm still in the honeymoon stage. But naturally I was keen to meet North American Amateurs and I only spoke to one.

Digs were arranged with a friend some 25 miles out from San Francisco. My only preparatory QSO with a W6 was with Lee W6FQW who was en route to the same hotel. I spoke to him on the telephone. At the summit of a steep hill in Lafayette, where I was staying, I could see the old mastas of the Trans-Pacific 100 metre beams. I learned that this was the QTH of Ed W6LDD, a tremendously enthusiastic Amateur. Ed is an attorney and plans his contest activity with the thoroughness of a legal brief. His success was apparent as I shuffled through his many awards (three times winner VK-ZL Contest, etc.). His Collins S line enabled me to make a contact with Bill VK2YB in Sydney. In addition to the Collins equipment for which Ed was famous, I ran a v.h.f. transceiver, an oddish Navy receiver of sentimental value and a miniature V.I. set. This latter allowed baseball and t.v. to be monitored. At 1.2 a.m. the car stopped me off in his Cadillac, we were only half talked out.

One day as I was coming out of Elmsar Electronics in downtown San Francisco, I saw a Ford Mustang at the curb sporting a centre loaded whip and a Ham number plate. As I moved into the cabin the driver, who I later discovered was the owner, lowered the window with a "Hi" (hot day, aluminium car). K6 Just Doing Fine offered to take me around and I was given a 50 watt odd frequency crystals I needed. Len gave up after a couple of dead end visits and proceeded to call Harold VK2JOK on 4 m. w. band. Harold obliged with a phone patch to a local supplier and the crystals arrived C.O.D. a few days later. All done at 80 m.p.h. down the freeway.

Len, during his daily travels as a sales engineer, kept watch with his Drake on the Northern California emergency channels. He once he had been able to direct rescue units to a road accident. I spent two days riding around the State and the area around the Mustangs, visiting many factories, including Elmsar, where I met Bill W6SAL. Evenings, K6JDF was controller on the Golden Bear Net, when upwards of 100 stations would check in. Voice procedure on the Golden Bear and 9 p.m. Western Country Cousins Nets was slick and a.m. v. and c.w. was commonplace. K6JDF's home QTH was a house trailer at Concord, Bay Area, where he had a driveway. The rear corner of the trailer came down an inverted V to straddle the back fence. It was to my advantage that his shack was a little crowded, and I was given a 50 watt portable a.m. all-band tx and rx. This was typical of U.S. Hams generous hospitality. Linears are the rage right now. I ran barefoot is old hat. Even the Canadians, I found later, fitted a pair of snowshoes to beat the QRM.

After two weeks around San Francisco, a Qantas Boeing took me up to Vancouver in a day and a half hours. A month before my sister had written she would meet me at 5 p.m. on the corner of Twelfth Avenue and Granville. As the airline bus dropped me off on its way into downtown Vancouver I saw her waiting across the street. I was five minutes late.

K5JJD had asked me to look up VETAKB. Always Kissing Blondes (Brunettes or Babies) was a real warm hearted character. He had ten kids and a Victory IV on sideband (Scientific Set Back, he called it). He had a rather unique certificate amongst his awards. He'd Worked All States, YL. His only VK2 cards were YLs, one being VK2JOK. He was very proud of his rig, even reckoned his Drake 2B had a W6 filter. I saw a lot of Vancouver and surrounding suburbs as Len took me here and there in the old Chevy.

Beautiful British Columbia, as the car number plates declare, is an apt title for this lovely land. Saturday morning I was in VETBHH. Al soon had us slipping Silver Spring Beer (with a large s.s.b. stamped on the bottle top). Al had a 100 watt rig, set nicely housed in the operating deck with the r.t.t.y. on his left. He was going for the A.R.R.L. 40 w.p.m. c.w. certificate. When I used his bug to call a few minutes later I pushed the weights right down to the slow end. Even with the hefty linear (600 watts), the R.D. Contest, he was and I got a set. VK2 to answer me on c.w. Al called on sideband and soon I was talking to Don VK2PU. Sunday we visited VETBHH's home overlooking Vancouver. His KW-1, a kilowatt on a.m. and list price in 1953 U.S.

\$3600, played second fiddle to a whole row of Collins desk-top units. Before I left Vancouver, Len presented me with a small Canadian flag, their new design. He had flown it from his car antenna on numerous field day sorties into the U.S.A. It's on the wall of my shack now.

In 25 hours the Continental Trailways Bus took me back to San Francisco for \$31 U.S. Right down through Washington, Oregon and Northern California the weather held fair and the Hostess plied me with donuts and hot chocolate. I had to leave for Sydney before my reciprocal licence came through, but when it does (there's a 90-day wait!) I'll stick it up here in the shack. Maybe I can use it next year.

Back in the home QTH, the old home-brew 20 watts looked pretty sick by comparison. Right from 100 watts to a 279 watt 400 W6TD But I'd just hooked up my new multiband trap antenna. Where did I get the trap? Well that's another story.

Dave VK2BSJ.

☆

"SUPERGAIN" ANTENNAE

(Continued from Page 6)

in copper elements having a diameter of 1 centimeter and operating (ratio of power radiated to power supplied) of the 9-element array would be vanishingly small—something like one billionth of a millionth of one per cent.

The calculation also shows that the efficiency is pretty close to 100 per cent, using the same type of element, when three elements or less are used. With four, it drops to a few per cent, and decreases rapidly thereafter.

Although, somewhat different numerical results are to be expected in the case of the end-fire array, which is a much more common type in Amateur circles, the results mentioned above nevertheless typify the trend as an attempt is made to get more and more gain from more and more elements in a given small space. There is, it appears, no substitute for size if gain is to be secured under practical conditions. For receiving, too, the "effective area" of the antenna must be considered; this depends pretty largely on the physical size and an antenna must be big in order to intercept much of the energy of an incoming wave. As someone once expressed it, the antenna has to be big enough to "get a good grip on the ether".

—T. T. Tatham, VK2TQ

NON-DELIVERY OF "A.R."

If you are not receiving your copy of "A.R." please follow these steps which will ensure the correct procedure is followed; any attempt to short circuit the system will only further delay matters.

Write to your Divisional Secretary advising non receipt of "A.R."; do not write to "A.R." The Divisional Secretary should write to the Circulation Manager "A.R." P.O. Box 36, East Melbourne, C. Vic., advising him of the problem. Unless this advice is received before the 8th of the month, a further month must elapse before the member can be re-instated upon the circulation list.

Please ensure that you always advise your Divisional Secretary in writing, verbal advice will not do.

I have had an idea in mind for some time that light, being an electromagnetic wave of very short length, may be affected by atmospheric conditions similar to those that cause v.h.f. DX. The experiment described here is an attempt to test this theory.

I am fortunate in choice of QTH in that we have a clear view of the sea horizon and that horizon is over 40 miles away. I selected a fixed point: the head of a bolt on our t.v. aerial in fact, and by measurement and calculation could set up a scale on my tower that would show the relative position of the horizon from time to time. The whole thing acted like a calibrated rifle sight grown to a 53-foot baseline so that one degree was 11.1 inch long and one minute of arc was 0.185 inch approx. I was now able to measure the relative effect from day to day, although I could still not find the absolute size of this bending.

The readings I took did vary although the variation was much smaller than I had expected. Only 10 minutes separated the two extremes that I have recorded to the present time. As one minute of arc represents about the limit of definition of my eyes, the readings I have taken can never be more than a rough guide to this effect. I have also noted long periods when haze on the horizon makes its exact position indistinct. On the other hand the thing I am looking for may exist as quite a large fixed refraction which I cannot measure.

Results so far suggest a correlation with air pressure but not exactly. It is more that the reading is high while the barometer is rising, but drops as soon as the pressure starts to fall in a rate-of-change manner.

So far I have noticed only one result radio-wise. On the morning after the highest reading I have ever recorded, VK7s were heard in Adelaide and several of the south-eastern boys were worked at quite good strength for the first time in several months.

To test for correlation I would be interested in reports of 2 mx activity in the coming DX season. Apart from the contacts you make, I am also interested in those you hear and also in those times when regular contacts are weaker than usual. Please, however, be honest and accurate with your signal reports otherwise you become just another statistic that does not fit.

While one obvious practical use of this effect is to predict band conditions, there is another point worth noting. If, as I suggest, light is bent by a tropospheric scatter force there is no reason why the effect should not exist on all the frequencies between 100 megacycles and 100 million megacycles; in other words, the u.h.f. microwave, and infrared bands. 2 metres could in fact turn out to be one of the least active bands in this regard and we may be timidly probing the edge of a vast field.

* Reprinted from "The South Australian Wireless Institute Journal," January 1967.

CAMP TECHNOLOGY 1967

For the third year in succession, Camp Technology was held at Mount Victoria in the Blue Mountains of N.S.W., during the Christmas holidays. Camp Technology, an enterprise rapidly growing in popularity, is sponsored by the world wide I.S.C.F. (Inter School Christian Fellowship) movement and is designed to cater for high school boys from 2nd to 5th year who might be interested in electronics or photography as a hobby or a career.

Conceived by a Sydney engineer, Camp Technology is an addition to an

very successful erection and operation of a three element 20 metre beam. Using a Swan 350 transceiver, and operating under the Camp Technology call sign of VK2BCT, excellent contact with most parts of the world was maintained throughout the camp. One of the most interesting contacts was that with Keith VK2AKX, who was holidaying in Japan.

Toward the end of the camp, many of the boys sat for the elementary and junior examinations set by Youth Radio Scheme organisers of the W.I.A.

The first camp held in 1964 attracted 14 boys. For the 1966 camp, 60 applications were received and 14 applications had to be held over till next year.

All the above activities were integrated into a programme which included daily studies in the Christian faith, in which the relevancy of a personal faith in a technological age was demonstrated.

After all, "Man shall not live by bread (or even electronics) alone, but by every word that proceeds from the mouth of God".



Making a DX contact.



"The Grange", the site of Camp Technology.

already well established series of Summer Camps, which each year draw hundreds of teenagers into various types of athletic and cultural activities.

During the recent camp, 46 boys, 14 officers comprising a scientist, engineers and technicians, and a variety of electronic and photographic equipment found its way to "The Grange"—a large property at Mt. Victoria where, for nine days, the boys took part in various projects in the fields of communications, industrial electronics, computer circuits, tape recording, servicing, electronic music, and still and movie photography.

From a communications point of view, a highlight of the camp was the

Technical Correspondence—

ARTICLES ON TRANSISTOR TRANSMITTERS

Equipment Exchange Bulletin,
P.O. Box 177, Sandy Bay, Tas.

Editor "A.R." Dear Sir,

I am very pleased that there were only few requests for copies of articles mentioned in my letter in Jan. "A.R.". I was dreading the flood of work anticipated. On the other hand, I am rather disappointed by the silence, if it indicates a lack of interest by Australian Radio Amateurs in transistorised circuitry for transmitters. Here, therefore, is a bit more information to spur them to greater interest in this subject.

While reviewing it I was staggered by the amount of reading I am going to have to do in detail if we are to treat it adequately in print. Several articles in the "R.S.G.B. Bulletin" make that thin magazine worth the price of the membership, and of course "73 Magazine" leads the field in America, notwithstanding its remarkable editorials (some of which sound almost reasonable!).

In the following list, I should not take too seriously the plethora of transistor types specified. Items locally available from Philips/Mullard and

Fairchild ought to prove adequate for experimenters willing to study characteristic sheets and prices, not to mention the 2N2991, etc. The AUY10 and SE3035 ought to be of particular interest, but experimenters should note that the very low output impedance of the high power SE3030 will pose some serious problems of peak ratings and power transfer, which should be approached cautiously and carefully.

It should be noted that useful material is also available from the "QRP Bulletin" (ref. VK5BS or W9YZE), and that a long and extensive bibliography on this subject appears in the excellent article in October 1966 issue of the "R.S.G.B. Bulletin".

Whew! If anyone knows of any more good practical references, would you please let me know this kind of information about them? In addition, there are Application Notes by Fairchild, G.E., Motorola and Philips, etc., available on request on company stationery; write first for list of titles available.

—R. L. Gunther (VK7RG).

[See opposite page for a comprehensive list of references.]

SUBSCRIPTIONS DUE

All members of the W.I.A. are reminded that annual subscriptions are now due and should be paid promptly to their Divisional Secretary. Non financial members will not receive a copy of "A.R.," and back copies may not be available upon request. To preserve continuity of your files of "A.R." please pay your annual subscription now.

ARTICLES ON TRANSISTOR TRANSMITTERS

Magazine	Date	Title or Information	Final	Input Power	Tr.	Mode	No. of Pages
"Am. Radio"	11/65	Transistor, Transmitter for 144 Mc.	AF102	30 mW.	2+	Ph.	3
"	9/66, 10/66	80 and 40 Mx Special (from "CQ" 4/66)	PADT50	20 W.	4	Cw.	3
"Break-In"	10/64	A Transistor Final Amplifier	AUY10	6.5 W.	2	Ph./Cw.	2
"	9/66	(Debugging Modulated Transistorised Tx's) ..					
"	10/66	The Behaviour of Transistors in Class C Amplitude Mod. Service (a pessimistic view)					
"CQ"	9/61	75 Mx Mobile	2N1046	(Thanks to John Adams, VK3)			
"	4/62	Zener Diode Transmitter*	1N1605	(Thanks to John Adams, VK3)			
"	1/66	Simple R.F. Output Circuitry Design for Transistors. (good)					
"	6/66	A Compact 40 Mx Transceiver (with a note about silicon versus germanium)	2 x PADT50	29 W.	4+	Cw.	6
"Electronic Circuits Handbook" (Cowan, 1963). Section 3: Four tx projects.							5
"G.E. Transistor Manual," 7th Ed. In chap. 2, "Considerations of the Transistor's Frequency Limitations," and p. 386: Low Power A.M. Broadcast Band Xmitter plus 100 mW. V.f.o. C.w. Tx.							
"Mobile News"	8/64	Proper Pi-Network Design.					2
"	5/66	160 Mx Transistor Transmitter	2 x AUY10	8 W.?	7	Ph.	5
"QRP Club Bulletin": Good circuits appear in this from time to time. Send \$US2.00 to W9YZE for membership; it is well worth it, both in principle and practice.							
"QST"	3/56	"CQ TR" 7 Mc. M.O.P.A.	CK761	QRP		(Thanks to J.L.)	
"	12/61	The Imp Transmitter				(Thanks to J.L.)	
"	5/64	All Transistor 50 Mc. Phone	2N2219 (2 W.)	(Thanks to John Adams, VK3)			
"	8/64	7 Mc.	TI486	(Thanks to John Adams, VK3)			
"	4/66	160 Metre "Solid Status"	2 x 2N1212	36 W.	4	Cw.	5
"	10/66	Low-Priced Premium Transistors for Amateur Applications.					
"	11/66	A One-Watt Rig for 40 Metres	2N697, etc.	1 W.	2	Cw.	2
R.S.G.B.: "Amateur Radio Circuits Book," three transmitters, p. 86, 87, 91. Otherwise mostly valves.							
"R.S.G.B. Bulletin"	3/65	10 W. Transistor Tx for 160 Metres	2 x AUY10	10 W.	5	Ph./Cw.	3
"	3/66	The G3SBA Top Band Transmitter (But see also p. 494 in July issue)	2 x BFY51, etc.	10 W.	4+	Ph.	6
"	5/66	QRP Transmitter				(Thanks to VK3BT)	
"	5/66	Low Power Transistorised Transmitter	QRP				2
"	7/66	Low Power Transistorised Transmitter 160 Mx 10 Mx	AUY10 FSF95	3 W. QRP	4+ 2+	Ph. Ph.	2
"	9/66	8 W., 160 and 80 Mx Tx by G3BIK	2 x 2N3053	8 W.	6	Ph./Cw.	1
"	10/66	A Layman's Approach to a Simple Transistor Transmitter (excellent general article) ..	2N3053	4 W.	2	Cw.	7
"	10/66	Half Watt 2 Mx Transmitter	2 x 2SC32	0.5 W.	6	Ph.	1
"Selected Semiconductor Circuits Handbook" (Wiley, 1961), chap. 4: H.F. Amps. (theory useful).							
"Transistor Radio Handbook" (Editors and Engineers, 1963), chap. 5. Theory plus ten projects							36
"Transistor Transmitters for the Amateur," by Do nStoner, W6TNS (published by Howard Sams, U.S., No. TTS-1).							
"73"	9/64	Complete 50 Mc. Station	2N2876 (2 W.)	(Thanks to John Adams, VK3)			
"	4/65	Transistor R.F. Power Amp. Design (good) ..			6	Ph.	3
"	7/65	2 Metre Transistor Transceiver	AF102, etc.	50 mW.	5+	Ph.	6
"	9/65	Simplified Solid State: 2 Metres	2N144, etc.		5+	Ph./Cw.	2
"	9/65	Evolution of a Transistor Tx	3 x 2N416	1 W.	6	Cw.	6
"	10/65	2 Metre Solid State Walkie Talkie	SYL4221	120 mW.	3+	Ph.	5
"	11/65	6 Solid Watts on 160	2N1907	6 W.	3+	Ph.	3
"	1/66	A 6 Mx Solid State Peanut Whistle (transceiver, self contained)	2N1143	400 mW.	2+	Ph.	4
"	2/66	The Astro Ten (10 Mx)	2 x 2N697	180 mW.	3+	Ph.	3
"	7/66	Designing Tr. R.F. Power Amps. (another good one, with complete design example at 50 Mc. and don't you dare change that to Hertzes!)	2N3553	QRP			5
"	8/66	Another Solid State 2 Mx Transmitter	2N3564	430 mW.	3+	Ph.	2
"	11/66	Streamlined Modulators (series)		1-2W.	2+	Ph.	2

* Author was "Dr. Shorza Gitchagoom" and was in April issue; is it a joke? The only problem is that this is exactly the same idea which was developed independently recently by one of our readers (A. Chaberg, from VK7), and a prototype was tested successfully. The idea of using the sharp back bias characteristic of a zener to amplify power does sound reasonable, and ought to be investigated further.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

APPRECIATION

Editor "A.R." Dear Sir,
I wish to sincerely thank VK4AP, Rick Lake, for his technical and other assistance rendered prior to my Lord Howe Island trip in November, 1967. His technical and other assistance was experienced, Rick spared no effort to assist. His assistance was deeply appreciated.
—Arch Hewitt, VK5XK.

EQUIVALENT FOR PAD750 TRANSISTOR

Editor "A.R." Dear Sir,
In reference to your reprinted article, "The 80 and 40 Transistor Special," I have contacted Mr. John S. Hill, the author of the article, and I have enclosed a xeroxed copy of the literature received.
The AC170 transistor which is the Philips equivalent of the PAD750 is available from Philips. These are in stock in Sydney and may be ordered through any of Philips distributors.
Hoping that this information may be of use to you.
—M. J. (Mike) Groth, VK5ZMG.

[The information referred to above has been retained by "A.R." Anybody interested can contact us.—Editor.]

IONOSPHERIC PREDICTIONS

Editor "A.R." Dear Sir,
Thank you for publishing in the January issue of "A.R." an excellent article by Frank Hine, VK3QL, on the subject of Ionospheric Predictions.
I have been interested in this subject for quite some time and this is the first occasion that I have been able to find such a wide variety of information under one cover and written in a way that everyone can understand, particularly in the matter of extracting information from the charts.
The amount of research undertaken by Mr. Hine must have been enormous and I should like to congratulate him on the most informative article.
—Warwick Johnston.

PROPAGATION OF AMATEUR SIGNALS

Editor "A.R." Dear Sir,
Many thanks to Mr. F. T. Hine for the excellent article in January "A.R." I hope you can persuade him to write again in the future and I would be grateful to see him deal at greater length with shorter distance communication up to 2,000 miles. How does one choose the best frequency, and in particular what are the advantages and limitations of v.h.f.? How does the W.I.C.E.N. net plan for, say, Sydney to Melbourne communication?
Also, I would be very interested in an article comparing the performance of i.m. and a.m. under practical Amateur operating conditions, if ever you have an opportunity to enquire a suitable author.
With many thanks for producing such an informative journal.
—E. J. Pottage, VK3FG.

"THIS PARADE OF EXPERTS"

Editor "A.R." Dear Sir,
I see in the March issue (DX Notes) that the back room boys are not painting an over optimistic view of the next summer's DX season. This is strange, as just last week I was reading of an expert who had just predicted that the next maximum would be the highest on record. But really, as we all know, this parade of experts has been going on for several years now, each predicting something different. There are probably so many different predictions by now that whatever happens, someone will be proved to be a good prophet.
I would suggest Mr. Editor that it would be a good move if you were to insist that any such long range forecasts you publish must come with the proviso that the expert making the forecast for hard cash bets that he will be right or wrong. The professional ionospheric services would probably offer 20 to 1 on a next month's forecast and maybe 4 to 1 for a six month's forecast, but decline to bet on anything longer. These odds are just a guess, as they would depend on exactly what was agreed on as to the meaning of being right or wrong.
On the other hand if long range forecasts of the next sunset maximum keep coming in, then the problem of "A.R.'s" finances are solved, if the experts offer better than even money. I am sure you would be happy to put

half your kitty on this week's expert at better than even and then the other half on next week's expert who predicts the opposite, so that you make money whoever turns out to be right. But if they just offer even, then save space by not publishing their "forecasts" since they themselves have no confidence in their own forecasts.

Why are there this deluge of predictions? Not because of radio propagation but because at this next maximum men will be going to the moon through the solar radiation. And someone, somewhere, at about now, is having to decide how much radiation shielding they should carry with them. Too little for the solar maximum will cost lives, too much will cost billions of dollars or roubles wasted. I feel sorry for this unknown decision maker trying to decide which experts guess will be best.
—Alan Head, VK3AKZ

NEWS ITEM

Editor "A.R." Dear Sir,
Morton Brewer, W6UJ, and Mrs. Marion Brewer will pay a short visit to Australia in December 1967. The visit will only be for three weeks and he will spend about a week in Victoria.
Morton is second engineer to John Knight, W6YU, who is chief engineer of KNBC Ch. 4, Los Angeles.

John Knight was out here for a couple of weeks just prior to the Ch. 9 allocation on a survey check for one of the applicants for that channel.
—John Murray, VK3AJY.

SUGGESTIONS

Editor "A.R." Dear Sir,
May I suggest the following ideas for your already excellent magazine:—

(1) A Questions and Answers Column
If a panel of experts cannot be found or co-opted to do the answering, may I suggest the readers of your journal will probably be only to writing to have a go and you can pick the best answers for publication.

(2) Articles Requested List
If your readers are asked regularly to write in and tell you of any particular articles they would like to read about, and if you published a few items requested now and then, I am sure you would find many Hams who would write the articles requested.

I would like to start the ball rolling by asking the following question:
26.96 to 27.23 Mc. is one of the allotted Ham frequencies. Are there any Hams on this band and if so where are they operating? Would any Ham on this band please let me know?
—Bob Callander, VK3AQ

[It's up to our readers.—Editor.]

For Reliable Connections

RESIN CORE SOLDERS

O. T. LEMPRIERE & CO. LIMITED

Head Office: 31-41 Bowden St. Alexandria, N.S.W.
& Melbourne, Brisbane, Adelaide, Perth, Newcastle



OTL/79

BRIGHT STAR CRYSTALS

FOR ACCURACY, STABILITY, ACTIVITY AND OUTPUT

Our Crystals cover all types and frequencies in common use and include overtone, plated and vacuum mounted. Holders include the following: DC11, FT243, HC-6U, CRA, BTG, Octal, HC-18U:

THE FOLLOWING FISHING-BOAT FREQUENCIES ARE AVAILABLE IN FT243 HOLDERS:—

6280, 4095, 4535, 2760, 2524 Kc.
5.500 Kc. T.V. Sweep Generator Crystals, \$7.25;
100 Kc. and 1000 Kc. Frequency Standard, \$17;
plus Sales Tax.

Immediate delivery on all above types.

AUDIO AND ULTRASONIC CRYSTALS—Prices on application.
455 Kc. Filter Crystals, vacuum mounted, \$13 each plus Sales Tax.

ALSO AMATEUR TYPE CRYSTALS—3.5 and 7 Mc. BAND.

Commercial—0.02% \$7.25, 0.01% \$7.55, plus Sales Tax.
Amateur—from \$6 each, plus Sales Tax.
Regrinds—Amateur \$3, Commercial \$3.75.

CRYSTALS FOR TAXI AND BUSH FIRE SETS ALSO AVAILABLE.

We would be happy to advise and quote you.

New Zealand Representatives: Messrs. Carrel & Carell, Box 2102, Auckland.
Contractors to Federal and State Government Departments.

BRIGHT STAR RADIO

LOT 6, EILEEN ROAD, CLAYTON, VIC. Phone 546-5076

With the co-operation of our overseas associates our crystal manufacturing methods are the latest.





VK3EI, is responsible for the station and its operation. Slow Morse broadcasts will be conducted for members in the junior and up group very shortly.

Last month we mentioned that a very attractive lapel badge for those who have gained the elementary certificate or higher would soon be available. I understand that this is to be of March. Also, there is now an embroidered pocket badge which should enhance a jacket very nicely. This is available now to members who have obtained the junior or higher certificate at a cost of \$1.00.

The S.W.I. Group publishes "Zero Beat" every two months and after the April issue the "Newswatch" will be included. Being an S.W.I. is very interesting and an important step in acquiring the ticket.

I would appreciate receiving news about Y.R.S. activities from all States by the last Wednesday of each month or before if possible. Please send to Mrs. M. Swinton, P.O. Box 1, Kilmara, N.S.W. 73, Mona VK2JAXS.



Publications Committee Reports

The Publications Committee met a week earlier this month as the normal meeting night fell on a public holiday. It is, therefore, possible that some mail meant to reach us by the second Monday is not included in this report.

Technical articles were received from VKs 1AU, Z210, JADA, 3ZKC and AS8.

The story of the Hobart fire, was submitted by Greg Johnston, VK7ZKJ. (VKPSS will please note.)

Correspondence was received from VKs 3AQ, 3FG, 3ACM, 3AJY, 3AKZ, 3ZKJ, 3ZIM, VUQV and C. Christiansen.

Some time was spent discussing the only item on the Federal Convention agenda of direct concern to this Committee. As we have a file on this subject it was decided to make this the basis for our contention that a new method of handling the postal mail deletions is desirable as the present method is an unreasonable state of affairs as far as our circulation manager is concerned.

We were pleased to welcome VK1LL to our meeting, when we had the opportunity to discuss with him a suggestion he made several months back. After we have had the chance to discuss his suggestion with the printer we will give the suggestion further consideration.

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, the listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

	PHONE	
VK3MS	314/335	VK2JZ 266/261
VK3AHO	313/325	VK4EIR 261/277
VK6RU	301/324	VK3TLL 254/258
VK3AB	290/314	VK3BZ 252/270
VK6MKM	298/313	VK3APK 226/229
VK4FJ	275/292	VK2ADE 223/237

Amendment:

VK4DO 168/180

C.W.

VK3KB	319/342	VK3AGH 279/292
VK313	285/313	VK3BZ 266/268
VK4DE	290/313	VK3ARX 262/270
VK3CX	281/312	VK6RU 256/277
VK4FJ	287/309	VK3CB 246/263
VK3AHQ	281/293	VK3TLL 245/248

Amendment:

VK4DO 184/201

OPEN

VK3AGH	308/328	VK2EO 285/306
VK2ADE	308/328	VK4EIR 279/301
VK6RU	306/328	VK2ACX 276/300
VK6MKM	300/317	VK3ARX 274/302
VK3BZ	294/309	VK3TLL 272/300
VK4FJ	289/313	VK3TLL 272/276

Amendment:

VK4DO 206/224

CONTESTS

"CQ" WORLD WIDE S.S.B. CONTEST

Freels of Rules

Contest period: 2000 hours GMT, 8th April, to 2400 hours GMT, 9th April.

Frequencies: 3.5 to 23 Mc.
Mode: Two-way s.s.b. only.

Exchanges: RS report plus the usual 001, 002, etc.

Scoring: (i) Contacts between stations on different continents, 3 points; (ii) Contacts between stations on the same continent, but not in the same country, 2 points; (iii) Contacts between stations in the same country, no contact points, but count towards prefix multiplier. One point per prefix worked irrespective of band.

The total score is the total contact points multiplied by the sum of different prefixes worked.

Logs: Use a separate log for each band. Logs to be postmarked no later than May 15, 1967. Address: "CQ," 14 Vanderventer Ave., Port Washington, New York 11050. Attention: W. S.S.B. Contest.

Awards: Certificates to highest scoring single op. station in VK for highest score on each single band and for highest all-band score.

N.B.—The full rules appear in "CQ," March, 1967, page 64.



P.A.C.C. CONTEST 1967

Freels of Rules

Contest period: 1200 hours GMT, 29th April, to 1800 hours GMT, 30th April.

Frequencies: 1.8 to 30 Mc. Cross-band contacts invalid.

Mode: Any, but cross-mode contacts invalid. Exchanges: RS (phone) or RST (c.w.) plus 001, 002, etc., for VK stations. PA stations will be the 100 or higher plus two letters indicating their province.

Scoring: Two points for receiving a number plus 1 point for receiving confirmation of the number. Announced—thus each confirmed contact scores 3 points.

The multiplier is obtained by adding up the number of provinces worked on each band. The maximum multiplier is 82.

The final score is the QSO score for all bands multiplied by the multiplier.

Logs to be postmarked not later than 15th June, 1967 and addressed to Mr. F. Y. D. Berg, PA5VB, Contest Manager V.E.R.O.N., Keizerstraat 54, Gouda, The Netherlands.

Awards: Certificates will be awarded to the highest scorers in each VK call area for both c.w. and phone.

S.S.B. EQUIPMENT

FOR THE

RADIO AMATEUR

★ FL-200B, FL-50 Transmitters

★ FR-100B, FR-50 Receivers

★ FV-50 VFO

★ FL1000 Linear Amplifier

★ FT100 Transceiver

★ FF-30DX L.P. Filter

★ Type F s.s.b. Generator Kit

Co-ax. connectors, baluns, etc.

Obtainable from the Australian Agents:

BAIL ELECTRONIC SERVICES

60 Shannon St., Box 811 North, Vics.

Telephone BR-2213.

VK3 Representatives:

MOSMAN RADIO SERVICES

11 Euby St., Mosman, N.S.W. 96-5342.

One of the most interesting events for the Y.R.S. in N.S.W. recently was the exhibition of gear at the W.I.A. Convention at Dural. This was a very successful event. A good example of what success the Y.R.S. is having and augurs well for the future. There were entrants from Posta Group, 44 Camp Technology, the Kingsgrove High School and Westlakes Radio Club. There were several contests held during the day, which proved very popular. The crystal timing contest was won by Jim Mathews in 47 seconds and the memory contest by Clark Gerber. On the construction side, the junior section (under 14) was won by Mark du Cross for his light sensitive relay. The senior section (over 14) was won by Douglas Friend for his television set and C.R.O.

Some of the other projects on display were several 1-transistor sets, crystal sets, Morse oscillators, an electric "ice-lad-dough" board and a television camera using a mechanical scanning device, photo sensitive transistor, intercom, the A.W.A. flip flop and an alarm. All in all it was a mighty effort by the boys and by Ivan for putting everything into excellent order. It was a very hot, humid day, but this did not deter the enthusiasm of the boys. The tent was crowded at all times with adults as well as the boys. This is the sort of event which could help Y.R.S. tremendously and it is hoped other States will follow suit in some way.

To help with the training of club members, Y.R.S. has started a programme of supplying electronic kits—as finances become available. To date a Philips KE20 has been supplied to Phillip "Can" College, Kingsgrove. A Philips KE/8 to Mittagong Training School for Boys, an Eveready Kit to Keith Howard for allocation to a suitable Hunter Valley Club, and a General Kit to Clementon Park Boys' Club. Of course, this project is severely limited as Y.R.S. is not a very financial organisation. In addition, the number of "home-made" kits have been issued to clubs on a loan basis. For example, audio oscillator kits, crystal set kits, continuous tone kits, telephone kits and similar sets of parts have been distributed to many clubs. These kits remain Y.R.S. property and are subject to recall if the clubs concerned fold up.

In addition, many issues of donated gear have been made. For example, Epping Boys' High has received a Gelois v.f.o. transmitter, North Strathfield Scouts have a low powered transmitter (formerly used by Bass Hill High School Radio Club), Clementon Park Boys' Brigade has an old 35Z transmitter (s.e. operated) and a Type 3 Mk. II, etc. The gear which was being used by the former Illawarra Youth Radio Club has been re-allocated. Scope soldering irons have been distributed to various clubs. This part of the Y.R.S. operation is becoming a special job and a volunteer with plenty of space and time would certainly be appreciated.

In 1961 there were five clubs associated with Y.R.S. In 1962 there were just on 50 in NSW alone. Rex Black, our travelling supervisor, should be congratulated on the tremendous job he has done to instigate the Y.R.S. and to have it gain so fast in a comparatively short time.

Camp Technology was very successful again this past summer with 46 in attendance. Having come from Victoria. Mr. T. Mayne, Snt., has very generously donated a Swan 360 transceiver to the Camp and with the loan of a three element beam from Amalgamated Wireless, the boys were able to work stations from all over the world. From this standpoint, of course, Victoria is a very good location as a spot for DX.

VK1: Len Whyte of the Canberra Youth Radio Club has been received by the club. VK1LN and is putting out a good c.w. signal on 80 mc. Len passed his A.O.C.P. last April and has been patiently waiting until the 15th (early in February) to get on the air. Another Canberra boy, Richard Swan, has just received word that he passed the A.O.C.P. at the January examination this year and no doubt is on the air by now.

VK2: Ray Carpenter of Westlakes Radio Club has gained the A.O.C.P. and has received a copy of the R.S.G.B. Handbook from C.T.S. and a large box of parts from the W.I.A.

VK3: Howard Rider advises that the Victorian Division of the Y.R.S. has received a club call sign of VK3ANE, and that Don Reid,



PRINTED CIRCUITS AID AUSTRALIAN INDUSTRY!

Applications for printed circuits from Precision Windings in industry are growing daily . . . it's simply amazing how many leading electronic and design engineers specify "Precision Windings" boards. PW's photographic process does have many advantages . . . small numbers may be manufactured economically . . . definition and detail are crisp and clear . . . negatives are readily available for alterations . . . and tarnishing is prevented by a protective over-coating. Above all the PW process offers quality control at every stage of manufacture. This is why more and more industrial organisations are coming to Precision Windings for up to the minute technical advice and prompt, dependable deliveries.

AND FOR THE HOBBYIST?

Don't worry . . . we're not neglecting our many friends who want a single circuit board. Send for our free folder on "How to prepare artwork" and for our price list. It matters little if you want one or a thousand boards . . . PW's price is most attractive. Many "Electronics Australia" designs are kept in stock and delivery is immediate. Special printed circuits are normally despatched within 7 days of receipt of your artwork. Artwork aids in the form of Solder Lands, Black Crepe Tapes, Clear Film and Transfer Letters are also available from Precision Windings at low cost. Write now!



52 Cambro Road, Clayton, Vic.
Phone 544-7370

LOW DRIFT CRYSTALS

☆

1.6 Mc. to 10 Mc.,
0.005% Tolerance, \$5

☆

10 Mc. to 18 Mc.,
0.005% Tolerance, \$6

☆

Regrinds \$3

THESE PRICES ARE SUBJECT
TO SALES TAX

SPECIAL CRYSTALS:
PRICES
ON APPLICATION

MAXWELL HOWDEN

15 CLAREMONT CRES.,
CANTERBURY, E.7,
VICTORIA

Phone 83-5090

LOG BOOK

IS NOW AVAILABLE

Larger, spiral-bound pages
with more writing space.

Price 7'6 each
including Postage

Obtainable from your Divisional
Secretary, or W.I.A., P.O. Box 36,
East Melbourne, C.2, Victoria.

Sideband Electronics Engineering

- ★ GALAXY V. and SWAN SW350: Latest production all-band S.S.B. Transceivers.
- ★ GONSET 2 metre S.S.B. Transceivers.
- ★ HEATH HW-32A 20 metre S.S.B. Transceiver Kits.
- ★ HEATH HA-14 400 watts p.e.p. output linear amplifier kits.
- ★ HY-GAIN multi-band verticals and tri-band Yagi beams.
- ★ NEWTRONICS latest all-band verticals.
- ★ WEBSTER Bandspanner, all-band mobile centre-loaded whips.
- ★ D.C.-D.C. mobile power supplies.
- ★ CO-AXIAL BALUNS, 500 watts, for dipoles and G5RVs.
- ★ JACKSON Bros. 6/36 duvernier dials, Swan SW350 type vernier movements.
- ★ CO-AX. PLUGS, N type for v.h.f.
- ★ CRYSTAL FILTERS, plug in type, 5165 to 5325 Kc. Sets of 5385 Kc. FT-243 crystals, etc., for filter construction. 8 and 9 Mc. FT-243 crystals and 9 Mc. $\frac{1}{2}$ " x $\frac{1}{2}$ " crystal blanks.
- ★ IMPORTED zero - bias 3-400Z American grounded grid amplifier tubes at U.S.A. prices, \$32.

Sideband Electronics Engineering

33 PLATEAU ROAD,
SPRINGWOOD, N.S.W.

P.O. BOX 23, SPRINGWOOD,
N.S.W.

Phone Springwood 511-394,
not part of the Sydney exchange!



Sub-Editor: ALAN SHAWSMITH, VK6SS
38 Whynot St., West End, Brisbane, Qld.

Many reports this past month give details of openings on 21 and 28 Mc. There is no doubt that Old Man Iono is now being indulgent to the poor mortals who pursue DX via the m.u.f.

13 Mc is now open daily to diverse places: firstly, U.S.A., Central America and northern parts of South America from 2000Z. Later, the Js appear and stay audible until well into the night. From 0600, the Asians appear, followed by Europe. The band finally closes here around midnight.

10 mc, although much quieter, has been following the same pattern roughly. Firstly around 2100, U.S.A. and VEs appear, followed by Js, then Europe between 0730-0930; after this, the band appears dead.

It is very encouraging to say the least, if conditions steadily improve, then our next spring-summer-autumn period may see some real activity on these bands. I will remember with drooping anticipation the brisk state of 10 mc immediately post-war.

To verify these reported openings, both from overseas and local, some time was spent on these bands and at this QTH they exceeded expectations. It was possible to QSO Europe nightly 0800Z here. On 10 mc, who using five watts to a dipole. The coming winter months may make the life out of these bands, but it is anticipated that working will bring some promising results. So wind that extra coil and see what you can do.

21 Mc is quite crowded at 1000Z, with Europe easily workable, as well as Africa and Asia.

NOTES AND NEWS

Trinidad: As Column Alan ZD9RE is active on 14125 and listening about 14260 from 2100Z. QSL W2GHC. (LIDXA)

Pitcairn Is.: Tom VRTIC is on every Monday 2000Z 2100Z 2100Z, and then moves to 2130Z 2100Z. QSL WATAJ. (LIDXA)

Gilbert Is.: Paul VRIC QRV 14195 and listening about 14150 up, and then moves to 2130Z 2100Z. QSL WATAJ. (LIDXA)

Kermadec: ZL1AI is still active at 0600Z. Now seems to stop around 14200.

French: M1950MH is reported on every Wednesday, 14190 1230Z. QSL WIDGJ.

Crete: Bill SV0WU works around 14200 at 1000Z. Also 2000Z at 1000Z. QSL W2GHC.

Maquarie Is.: Rod VK0CR 14180 0800Z, also sometimes 14070 c.w. QSL G. Johnston, Inglis St., Newcastle, Hobart, Tas.

LAERO Operation: This occurred from Clifton Is. for a period of two hours 1600-1800Z. If by chance you did manage a QSO, send the QSL to Bill Rindone, W4SBO. (LIDXA)

Nicaragua: YN6AV 14200 and elsewhere after 1700Z. QSL to Aquileo Vanerio, Chinandega, Nic. (VK4UC)

Salvador: YS1VST 14150 0545Z. QSL, Box 585, San Salvador. (VK4UC)

Norfolk: Olaf VK3AHJ/HF is active from 14150 14100 2100Z 2100Z. His next DX-pedition is to Nauru if he can make it. (VK4UC)

Alcatraz: These and more are QRV from here. KH6GHP/KL7, W4PAY/KL7, KL7PFF, KL7PFR. Listen 0700Z around 14240. (VK4MY)

Cocos Is.: T14100 14100 2100Z 2100Z. QSL to Bill Rindone, W4SBO. (LIDXA)

Grenada: VP2GHI 14140 0700Z (VK4MY). Also VP2GLE on c.w. around 14600 most days at 2030Z.

Bonaire Is.: Activity by PJ5BS has now concluded. May be activated again later.

Gibraltar: ZB3AM 14038 at 0730Z. (VK4MY). Also activity from this spot on 21 and 28 Mc. 0600Z.

Yemen: 4WIK/HB9AAT, QRV 14120 1900Z. QSL HB9AAT. (GJUGT)

Thailand: W4SBO 1100Z. (GJUGT)

Gambia: ZD3G 14024 and 14200 2000Z. QSL K6ENY. Will be here for a year. (GJUGT)

Garden: TR8AR 14024, 2100Z. QSL Box 3122, Laverhill (GJUGT). Also TR8AG, 14140, 0700Z. (VK4MY)

Ivory Coast: TU2AY 21 Mc. s.s.b. QSL P.O. Box 28, Abidjan. (GJUGT)

Lord Howe Is.: Just another reminder that VK2VAA and VK2EX will be active May 5-15. Original time given was in June. One stipulation is that no calls will be answered on

transmitting frequencies. QSL P.O. Box 323, Springfield, N.S.W.

Tahiti: FORB, 14118 c.w., 0600Z. (VK4MY)

Also: FO8AA almost daily, 14-1500 GMT, mainly 14043 c.w.

Qatar: Ray VS8ARV is ready to begin operations from here, on final approval from the Chief of Police. QSL via VS8ARV.

Alghair: W4SBO YABRC quite active on 14121 0330 GMT. QSL via DLME. (LIDXA)

South Georgia: Dave VS8IE on daily, 14204 0800Z. (LIDXA)

Gales Is.: HC6FN 21330 0100Z. QSL WA-2WUV. (LIDXA)

Kamarian Is.: This trip was cancelled due to postal instability. QSL, which will now attempt operation from FL8. (LIDXA)

Malpele Is.: K4CAH of Z12P fame is said to be planning a journey here.

New Hebrides: FJ4AC and YJ8BW both very active now. The former 14010 1045Z, and the latter on most bands at various times.

Sierra Leone: 9LJUM ex PAULI, Sundays mainly, a.m./c.w. 7 and 14, 0900-1300Z. QSL 9L1SL. (GJUGT)

Treball Oman: MP4TBO 21400 1400Z, also 14180.

Falkland Is.: VP6GJ 14005 0700Z. (GJUGT)

Cape Verde Is.: CH4BC 25 a.m. CH4AJ, CH4AL 14 and 21 s.s.b. CH4AB 14 a.m. (GJUGT)

Botswana: ZS8D and ZS8L QRV from here shortly.

Crozet Is.: FB8WU 14140 1800Z and c.w. 14050 1300Z. (GJUGT)

Falkland Is.: VP6NNK 14180 1400Z. QSL is AP-25G. (GJUGT)

Madeira: Hal CT3AS very active 14 Mc. c.w. and s.s.b. (VK7LT).

Also: worked here on 2013 2100Z and 21 c.w. He is on 28 Mc. c.w. at 0900Z.

The following are a few random extracts from the QSL Editor of "Break-In," which supplied a very comprehensive DX report—

Rep. of Algeria: TX0AH, Harry ex DLJAH, 14180 21 c.w. QSL P.O. Box 3, Maison Blanche.

Newfoundland: VO1HB, 14150. Also VO1PB 7003 14100 2100Z.

Samoa: WIDEL/KS6, 14230. QSL to Box 8, Pago Pago.

Cyprus: ZC4CI on 14150.

Cuba: CO2DR, 14185. QSL Box 690, Habana.

Venezuela: YV5AE, 14138. QSL Box 3558, Caracas.

Bahrain: MP4BF6, 14110. QSL to WCTCN.

Hong Kong: VS6F5 14160. QSL Box 22, Hong Kong.

Puerto Rico: KP4CHS, 0525Z, 14007.

Tripoli: SA4TH, 2130Z, 14113. QSL Box 850, Tripoli, Libya.

Lloyd and Ritz Island in California, plans to move to West Africa early March.

Bermuda: VP0WB, 14090. QSL Box 275, Hamilton, Bermuda.

Rhodes: SV0WU, 14040, 1530Z.

Marcus Is.: KG6IF, 14340. QSL to W6ANB.

Wallis Is.: FW8RC, 14138. Reported active during winter.

Turkey: T2AC2, 14050. QSL to K4AMC.

British Guinea: New prefix is HR1.

Tunisia: 3Z4AZ, 14112. QSL to W6BBE.

Greenland: OK30B, 14030, 2000Z.

Curtis Carier: Box 2189, 1983 Comm. Sq., A.P.O., N.Y. 09023.

Vietnam: KIYPE/XV5 14 c.w. and s.s.b., also all bands and modes.

Indonesia: W0GTA/8F4. All bands, modes.

Don Miller, W9WNV. This globe trotter moves his last DX spot to 14150. It is not possible to predict just where he will be when you might receive these notes. Rodriguez and St. Brandon Is. are the next on his list. Then Tromsø and Bear and on.

Just keep an ear to his figs, or for a pile up. F.E.A.R.L.: New QSL Manager is Capt. L. P. Stowdard, K4JH, 5th Air Force, Box C88, A.P.O. San Francisco, 96355.

DM8GQ: This station sends out test signals around 1400Z. Reports to D.A.R.C. are requested of its reception. (Heard here regularly.)

Canadian Centennial Year: As reported earlier, VE2 for the year of 1967 is to be used to the call 3C. Lot of them are doing so on all bands.

ACTIVITIES

Ken VK3TL has not been so active these past few weeks. However he still notched some good ones. 30 a.m./s.s.b. 14180 14180. VK3JA Norfolk. VK3AHJ/HF (Norfolk).

VK2B1R/J9, VP2GLE, 3COMY and other 3C prefixes and SNAPFF. QSL received were EA-6BH (Belmont Is.), M4BGRD, VP2QB, ONVNV, LX, VO1AV, ZC4RM, VK3K/LH, YASTNC, VE2G/SU, W0CTA/PA, VP8RJ, ZF1GC, VP-8KM, CT3YA, VP23J, JUSU, etc.

Dead VK4MY landed these on 14 Mc. s.s.b.: HP1KYZ, XE1AAW, VP2KJ (Grenada), I89WNV, VK2AIF/XV5 (1300Z), ZK1AR (14108 14108) (14130 14130), VP2GHI, VP2GHI, PZ1BW (14110 0625), VPRJ (14112 1000), TI-

9JIC (14100), SN2ABG (14127 2118), YU2CE, Z1GJS, 4X45W, KH6GHP/KL7, W4PAY/KL7, KL7PFF, etc. These were heard on 20 s.s.b.: FYTUL, KC6BW, ZC4BG, UC2AA, TR8AG, FO-8BR, VP1AB, 9N1BG, JTIJAJ. Mostly around 0700Z.

Chas. VK4UC now using a Bruce Array on 28 and finding it an improvement. His score this month using his usual QRP was as follows: YS1VST, TG2EP, TG8RI, TG8IA, FROC, HA, 7LP, KV4CK, KZ5US, DU9PC, FL8RA, XE-1JLD, HC1MF, KZ5QH, KP6AZ/M, FO7CK, KH6AVI, 4X45W, 4X45W, HS1JL, Z1ZKZ, QSOed mainly between 0700 and 1200Z. (Thanks Chas.)

SOME QTHs

HC1MF—W4SFL, 9M6LE—9VINT, HS1JL—VK4MY.

3C1AS—G2IM, R.S.G.B. 5N2AFA—W7VRO, 3COMY—via VE1 Bureau.

KP6AZ—W6PAY, ZS8L and ZS8D—W4RE, VK2BR/J9—W4ECI.

9X3WV—Box 663, Kigali, Urundi, 9X3WV—Ex G3JUF, via R.S.G.B.

YV18T—Box 585, El Salvador, YR18C—Ex ZL2NS, QSL to home QTH.

VU2FN—Embassy of Canada, New Delhi.

SUMMARY

Several letters this month complain of the ever increasing commercial QRM on 20. It is only too obvious that it is increasing on all bands, but what can be done or what is being done? How many are legitimate? Who are the bootleggers? Which are operating in Region 3, and so on? Geo ZL2AFZ reports a lot of this type of QRM on the high end of 21 Mc. 80 and 40 metres become simply cramped to the limit as the night progresses. I hear quite a few unidentifiable signals on 20 metres at various times. I notice too that during contest and other periods of high activity many of these stations just disappear. Draw your own conclusions.

My thanks again to the column's supporters. Don't leave me, keep sending in whatever you have please. 73, Al VK6SS.



MP4TBO TRUCIAL OMAN

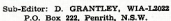
A familiar face from the Oil Sheikdom, Roger Baines operates from the state of Sharjah. He is with Trucial Oman Scouts, a member of the Peace Force from the British Government. The gear in use is a KW2000 with an after burner, FI1000, 400w, p.e.p., to 243Z. Roger says if you think it's been hot this summer, the temperature at his QTH goes to 130 degrees F. and very humid. He rates his VK3000 who does a fine element good as the best signal out of VK.

Give Roger a call, he is always eager to chat chew with Oceania. Send his QSL to MP4BWB or V1A2K.



CONTEST CALENDAR

- 8/9th April: "CQ" World Wide S.s.b. Contest.
- 29/30th April: P.A.C.C. Contest 1967 (VERON).
- 13/14th May: N.Z.A.R.T. Sangster Shield (3.5 Mc. only).
- 8/9th May: N.Z.A.R.T. Memorial Contest (3.5 Mc. only).
- 9/10th July: R.S.G.B. 18 Mc. "Summer" Contest.
- 12/13th August: Remembrance Day Contest.
- 7/8th October: VK/ZL/Oceanic DX Contest (phone section).
- 14/15th October: VK/ZL/Oceanic DX Contest (c.w. section).



Amateur Radio, April, 1967

Correspondents to the V.h.f. Page are reminded that the Sub-Editor must receive their notes by the following dates:	
April 29	August 28
May 27	September 30
June 24	October 23
July 29	November 25

Remember also, all copy where possible should be typed on one side of half a foolscap page (6 x 3 inch) with a one inch margin on each side, and double spaced.

April 29	August 28
May 27	September 30
June 24	October 23
July 29	November 25

VICTORIA
Activity in VKS over the past month has not been in the level where one has to look for

Activity in VK3 over the past month has not been to the level where one has to look for a vacant spot on 6 or 2 metres, but the average v.h.f'er could average four or five contacts a night if he wanted.

30 and 40 metres, and the 6 mx net, some 6 mx mobiles were heard operating in the Hobart area and the Melbourne mobiles and fixed stations gladly kept the net clear to avoid interference. 73, Cyril VK3ZCK.

At the January v.h.f. meeting our former scribe, Peter 4ZPL, tendered his resignation. We were sorry to see Peter leave Brisbane, but no doubt he has made many friends in Townsville by now.

On higher v.h.f. bands in the South, that the Queensland group should follow suit and actively participate in similar experiments. Subsequently, a group project was formulated to establish 6 mx men on 2 mx, and 2 mx men

the initial construction meeting of the project. The project was fully discussed at the Feb. v.h.f. meeting when Roy 4ZRM introduced several suitable circuits to the members. The "Break-In" circuit successfully used by the Christchurch New Zealand U.h.f. Group was

antennae on behalf of the group. Speaking about antennae, Bill 42BD very generously gave four 16 element beams to the 432 Mc. group. It was a case of first come, first served. Bill's stipulation was that the recipients must put a signal on 432.

As the International Convention is to be a big event, Mick 4ZAA said that we could well expect 4,000-5,000 Scouts from all parts of the world. Mobile and portable rigs will be the order of the day, so what about it mates? Final plans have still to be formulated.

The serious problem of t.v.i. on 6 mx band is still a matter for further discussion. However, in the meantime all Queensland Amateurs are requested to stay off the band during television hours. There are no other amateurs

transmission hours. There are one or two exceptions to this, but for further information please contact the Secretary of the V.h.f. Group. Please remember that your non co-operation in this matter will possibly affect us all.

Graham ZZZG is currently re-broadcasting the Sunday morning 80 mx news on 2 mx. After one or two initial problems were over-come, the news comes over loud and clear and after last Sunday's news quite a few 2 mx stations were on the air. Our thanks go to Graham for providing this facility.

If any Amateur is interested in our v.h.f. projects, he is cordially invited to contact the V.h.f. Group in Brisbane through the Divisional Secretary, W.I.A., Box 638J, G.P.O., Brisbane. We will do what we can to assist.

73, Alan 4ZAE.

Southern DX has decreased rapidly during the past few weeks. An opening occurred on 28th Jan. when FK8AB maritime mobile was worked at 1345 E.A.S.T. Channel 0 stations continue to be heard but no sign of any Amateur signals except for 5ZKW and 2ZGA at 1100 to 1200 E.A.S.T. on 16th Feb.

On the local scene we welcome Peter 4ZPL (ex Brisbane) to the northern gang. Graham 4ZGJ is back from his annual holidays, while Phil 4ZEE is off to Melbourne for a short stay. Phil was recently elected president of the local radio club. Congratulations to Lance

Charters Towers.—Bill 4XZ has been heard operating on 6 mx with his dipole aerial. The locals are hoping to work Bill when he puts up his new yagi. Hope it will not be long.

SOUTH AUSTRALIA

The most recent meeting of the VK5 V.h.f. Group took the form of the Annual General Meeting. The report by the retiring chairman, Eric SZEJ, was most avidly accepted by those

man's report concerned the achievements of the Group, namely the re-commissioning of the beacon transmitters and the conduction of another successful picnic outing.

At the conclusion of the mandatory business

primarily due to the lack of numbers that attend the A.G.M.

With respect to band activities, apart from an occasional six or two mx DX opening, it could be said that short of administering the last rites for club activities in 1988, there is

has been radiating an excellent t.v. signal of high quality, to the various members of the t.v. group.

In general the outlook is most depressing at the present moment, however next month could reveal an entirely different picture. T3.

AWARDS FOR TECHNICAL ARTICLES

Harold Hepburn, VK3AFQ
Roger Harrison, VK3ZRY
Phil Williams, VK5NN

The awards have already been sent to these gentlemen.

News time is here again. Well there is not much to say except thank you to all those contributors who have sent in typed or legible notes this month. In this edition of "A.R." is a list of copy dates for "A.R." for the rest of this year. Just one thing more. Not only I but the other sub-editors and the editor would very much appreciate it if all copy could be typewritten on half a foolscap page and double spaced with a one inch margin at each side. 73, Cyril VK3ZCK.

(The VK2 New Year Field Day results were enclosed but are not decipherable, so I am unable to include them.—Sub-Editor.)

worked VZLBA/P at Mt. Conocodas. To all those who participated, the committee wish to say thank you, and if you have not been in a Field Day before, well give it a try next year. Talking of field days, it is felt that the ethics of Amateur Radio are degenerating when a monetary prize is offered for a 2 mx fox hunt

The 2 mhz Morse session is becoming very popular as we now have four very capable operators in 2ARF, 2AHW, 2PQ and 2ANY. The session starts at 2000 hours most week nights.

HUNTER BRANCH
St. Ma.: During the month things have been quiet, the last DX was on Jan. 25 when some VK3s and VK5s were worked; nothing else since, only lots of tuning and calling when Channel 9 was heard.

Jean Duplat, FK8AB, on this bond, maritime mobile on the S.S. Caronte. He was worked many times by the local 52 Mc. gang. He said that he has heard VK signals from his home QTH in Noumea and hopes to have both 144

We from the Hunter Branch extend our sympathy to the VK7 boys in the disastrous
Hobart and district bush fires.

Most nights this band is rather quiet with odd Sydney stations heard, but a couple of nights each week there are a few locals to be heard usually, 2ZSG, 2ZWM, 2ZMO, 2ZFR and others when work permits.

The Y.M.C.A. in Birmingham is starting a radio club and guess who is teacher—none other than Kevin 2ZKW. The official opening was on Friday, 24th Feb. Among the official guests were Gordon 2ZSG, Secretary of the Hunter Branch, and Keith 2AKX, of the



FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

The QSL Manager for Israel writes: "I am asking your help for a human operation. There is a 52-year-old woman, the mother of my son, in the Second World War. The gestapo took her son away in Warsaw in October 1943 and since then she lost all contact with him. She heard about the Radio Amateur Society and is asking our help to find her son. His details are Michael Lieberman, born Nov. 1917 in father Boris and mother Rosa Lieberman. We would like to ask you to do all you can to find any trace of him (will you please look in the phone book and directory) and send any information to Mrs. Sofia Balicka-Lieberman, 23 Palliser Rd., London, W.14, England."

The Annual U.S.S.R. DX Contest is scheduled to be held from 2100 GMT, May 6, to 2100 GMT, May 7. All bands 3.5 to 28 Mc. may be used and the mode is only U.S.S.R. stations will send RST plus the number of his region, while DX stations RST plus usual serial number. Contacts may be made between any two stations except those in the same city. Contacts between stations in the same continent count 1 point. Contacts between stations in different continents count 3 points. Scoring only any period of 12 hours' operation will count. Logs to be sent to Box 88, Moscow, by 1st June, 1967, and must indicate the 12-hour period of operation. Awards to the first five highest scores in each country. Further information may be had from this Bureau.

Home-Brew Awards. This is a new award in Amateur awards. To date, only three have been issued to VK stations. For W.I.N.B. Certificate, send direct to WZMEL, the following: a photo of Amateur Station, a 1000 ohm 1/2 watt tx and rx (no kits) and one I.R.C. to cover return postage. Applications to be sent to Al J. WZMEL, 10.6, Wappingers Falls, New York 12590, U.S.A.

Ref. para these notes, March "A.R." regarding proposed visit. The VK QSL Manager writes: "It has been necessary to make a new routing, leaving here on 7th March not going to Australia. This will make it take more leisurely trip possibly next year. Please advise VK3MR, VK3AHO, VK3NR, VK3GN, VK3ATN and VK3AHC and Warwick Johnston."

Advance information on the 1967 QRP Club's QSO Party from 02x, Aug. 19, to 22x, August is to hand. Further details will be published later.

QSL Traffic through this Bureau continues to increase heavily. Cards handled during the first half of February totalled 10,406, the highest monthly total ever recorded in the 34 years' records. It represented an increase of 12 per cent. over any previous month.

Ray Jones, VK3JR, Manager.

NEW SOUTH WALES

The programme of lectures for the VK2 Division's monthly meetings provides that at least one lecture during the year will be given by a member of the V.H.I. Group. And so it came that the VK2 Division's first lecture, about "S.B. at V.H.f." at the February meeting, before an audience of about 50.

Before the lecture, however, the President (Tom VK2OD) announced that a presentation had been arranged for that evening, the recipient being Peter Coenraads, a lad who had joined the O.C.P. while member of the Institute's Youth Radio Scheme. The prize had been purchased from funds donated by the Overseas Telecommunications Commission and the chairman extended a cordial welcome to Messrs. E. Knowles and R. Baty, representing the Youth Radio Scheme. Peter and Peter and thanked Ivan VK2AIM for arranging the presentation.

In presenting Peter with a transistor manual, the President (Tom VK2OD) was in fact donating funds to the Y.R.S. The Commission was mindful of the fact that they and other large employers of labour in the field of electronics and communications would reap much benefit in return. It was only by encouraging youth to take an interest in the things that they had to do that necessary man-power would be forthcoming to fill the ever-increasing need for technicians. As a result of the excellent start given to him, the Youth Radio Scheme was doing very well as a junior technician

with O.T.C. and Mr. Knowles offered him heartiest congratulations and best wishes for a successful future.

Peter made a suitable response, particularly mentioning the work of the Y.R.S. supervisor, Rex VK2YA.

The lecturer, Keith VK2ZAU, began by stating that the most efficient method of transmission of intelligence was c.w., followed by s.b., d.s.b., w.b.f.m./a.m. and n.b.f.m., in that order. For the purposes of this lecture, however, attention would be given to those systems allowing direct transmission of speech.

Comparing a.m. with s.b., it was shown how the latter achieved its superiority by getting rid of the characteristics that swallowed up so much power—the carrier, for instance, with further efficiency being gained by transferring all the intelligence into one sideband.

A further advantage in s.b. transmitters was the greater ease of switching power levels for short or long distance working. This was one of the appeals of s.b. as the signal may be generated at very low levels, then amplified to the desired output level with linear amplifiers.

For best results on both v.h.f. and h.f. bands, a receiver should have a low noise figure and good stability. The use of the use of s.b. made some Amateurs realise the inadequacy of their present receiver, then the lecture continued to be practical, showing to drift in tuneable receivers, it was amazing how many v.h.f. converters had an oscillator injection which was far from a T9 note.

A considerable part of the lecture was devoted to ways and means of bringing receivers up to standard to receive the reception of s.b. signals. In addition, a comparison was made of reception with the standard detector and h.f.o. as against the more common method of incorporating a product detector.

The various points in both receiver and transmitter design were explained with the aid of large circuit drawings. Keith had prepared his lecture thoroughly, in great detail, and at its conclusion, Ernest Allard, by Harold 2AAH was well supported by the audience.

Apologies for non-attendance came from Peter VK2JZ and Warwick Johnston. The latter indicated that he was willing to continue with the positions of registrar and co-editor of the Bulletin. Warwick also has been acting lately as minute secretary at monthly meetings, is one of a small band of stalwarts without whose help the work of the Division would come to a standstill.

Applications for Institute membership were received from the following, and they were duly accepted at the meeting: Full members—Gordon Cliphams, VK2SJ; Associates—Milton Moore, Robert Hazelwood, Kevin Hannan, Reginald Connolly, John Brier, Ernest Allard.

President Tom reported that during the month the Federal President (Max VK3ZS) and Federal Secretary (Peter VK3JZ) paid a courtesy visit to the Council and the Constitution Committee. The main purpose of the visit was to discuss various problems that had arisen in regard to the proposed Federal Constitution.

A member of the Constitution Committee, Bill VK2VE, gave a resume of the most contentious matter discussed. As a result of these discussions it was felt that members of Federal Executive would now have a better grasp of the sympathy of all VK2 members to the Division's stand on these matters.

With regard to the bush fires in Tasmania, my view was taken opportunity of offering the deepest sympathy of all VK2 members to our Tasmanian friends in their tragic losses, both in lives and property.

The President expressed his sincere ideal man for the job and we all wish him well.

SILENT KEY

It is with deep regret that we record the passing of:

VK3ADQ (ex VK3LI)—

C. L. ("Lyle") Rogers.

VK5OK—Lloyd Brier.

VK7MK—M. K. Koglin.

had been completely destroyed. (One Amateur, Mr. M. K. Koglin, VK7MK, lost his life in the bush fires—Editor.) Federal Executive has instituted a W.I.A. Bush Fire Fund and it was hoped members would contribute liberally to it. Donations could be addressed to the Federal Executive, W.I.A., P.O. Box 38, East Melbourne. The VK3 Division's Council had made an initial payment of \$10 towards the fund.

Continuing with the interview, the visitor expressed disappointment at the response to the I.T.U. Fund, particularly by the larger Divisions. Later, when dealing with the future of Amateur Radio, Max stressed the danger to the Amateur Radio movement, particularly in Region 3, by the emergence of Asian countries who were pressing their demands for more and more frequency space. It was a matter of urgency that Amateurs should populate the bands to a greater extent and contribute to the I.T.U. Fund so that we would have representation in the fight to save our bands.

We have already referred several times in the notes to the well-equipped library at Wireless Institute Centre, the Aclison St. Crow's Nest. This has been installed and built up for the benefit of all members, and it is very disappointing to all concerned that greater use is not being made of it. Keith VK2UE is doing a good job as librarian and he would be very disappointed if he was not to be available books. While on the subject of the library, Adrian VK2HE has donated a complete set of CQ magazines covering a period of 12 years.

On Sunday, 26th Feb., we donned our skin-diving suits and joined the crowd heading for the Gosford Field Day. Even torrential rain could not dampen our Gosford friends, who have a reputation for turning on one of the most popular field days we know. A change of venue was made, the racecourse at the Showground, where there was more cover and the programme went on as planned. In almost all instances, the weather appeared to be up to standard, with visitors from all over the place. We noticed Tex VK2AHF, a K2 mobile marine, while Arthur expressed his intention of returning home to Ireland after interstate pilgrimage searching for steam engines, stopped off at Gosford for the field day and washed the mud off his truck with a few 807s. 73, Ivan VK2AIM.

HUNTER BRANCH

The Annual General Meeting of the Branch, which was held at the home of the usual democratic affair with all positions being filled in record time. Other than for regard to the election of a President and the calling to order of the meeting several times during the two and a half minutes of the election, time everything went very smoothly. Visiting Divisional President (Tom O'Donnell) took the chair during the proceedings, and with the assistance of the meeting, created one new post of great importance to the Branch. The retiring President (Frank ZAPO) had expressed the wish to assist Amateurs in the field of electronics and had pointed out that the nature of his employment is such that he has not enough time to devote all his spare time energies to Branch affairs. In view of this, some cunning gent, and in the opinion of the Branch, it was felt that this could have been Gordon Z2SG, suggested that Frank be approached regarding his willingness to become Branch Patron. To this he agreed and was duly elected at the meeting. This new office is one of the most prestigious and important in the Branch and the Branch has such a capable man as Frank to fill the position. With his long record of public service and his deep knowledge of the Branch, it is a pity that an ideal man for the job and we all wish him well.

Another Frank, this time Z2FX, was elected as Vice-President of the Branch Presidency. Although a relative newcomer to our hobby, Z2FX has shown himself to be intensely interested in Amateur Radio and has been a valuable asset to the Branch. The company president apparently found the past committee to their liking, because the remainder of the executive were re-elected to continue in their positions. The new Presidents, Bill Z2T and Keith Z2AK; Hon.

NOW AVAILABLE—

THE 1966 EDITION

★ A.R.R.L.—Radio Amateur's Handbook

The Standard Manual of Amateur Radio Communication

Price \$6.10 posted, or 58/6 and postage 2/6

NOW AVAILABLE—

★ The Radio Transistor Handbook

by Stoner & Earnshaw.

Price \$6.65 posted, or 64/9 and postage 1/9

THIS UP-TO-DATE HANDBOOK COVERS A WIDE RANGE OF COMMUNICATION
FOR BOTH AMATEUR RADIO & COMMERCIAL APPLICATIONS

MCGILL'S AUTHORISED NEWSAGENCY

Established 1860

183-185 ELIZABETH STREET, MELBOURNE, C.1, VIC.

"The G.P.O. is opposite"

Phones: 60-1475--6-7



DF-2

FOSTER DYNAMIC MICROPHONES FOR HAND-DESK USE

SPECIFICATIONS:

Output Impedance	50 ohms or 50K ohms
Effective output level	—55 db. [0 db. = (one) 1V. Microbar]
Frequency response	200 to 10,000 c.p.s.

OMNI-DIRECTIONAL DYNAMIC:

SIZE: 3" x 2-1/8" x 1".
Cable: 12 ft. of P.V.C.
Switch: on-off.
Desk Stand. Clip folds for hand use.
Colour: WHITE.
Plastic Diaphragm.

Retail Price
50K ohms
£2/14/0
+ Sales Tax 4/9

A QUALITY PRODUCT OF EXCELLENT DESIGN



Marketed by

ZEPHYR PRODUCTS PTY. LTD.

70 BATESFORD STREET, CHADSTONE, S.E.10, VIC.

Manufacturers of Radio and Electrical Equipment and Components

Agents: D. K. Northover & Co.; Neil Muller Ltd.; Homecrafts (Tas.) P/L; Jacoby, Mitchell & Co. P/L; T. H. Martin P/L.

A LARGE RANGE OF TRANSMITTERS, RECEIVERS, TEST GEAR, AND DISPOSALS RADIO PARTS AVAILABLE

★ CRYSTAL CALIBRATORS, TYPE 10

Freq. range 500 Kc. - 30 Mcs. Usable to 50 Mcs. 500 Kc. xtal and 250/500 Kc. b.f.o. Provides heterodyne output in steps of 1 Mc. Gear driven dial. Calibration every 2 Kcs. "Spiked" output at 1 sec. intervals to identify beat note. Power req.: 12v. d.c. at 300 mA., 250v. d.c. at 15 mA. At this price who can afford to be without one. \$8.00.

★ VARIACS

115v. 18 a. New in cartons, \$18.00 ea. or \$32.00 pair.

★ TRANSCEIVERS, TR1986-7

115-145 Mc. Employs heterodyne exciter in tx. TT15 p.a. Single xtal locks Tx and Rx on same frequency. In-built modulator. Supplied with 4.86 Mc. xtal. \$30, circuit \$1.

★ SR550 DUAL CONVERSION COM. RECEIVER

160 metres to 6 metres, Amateur Bands only. 3.5 Mc. xtal band edge marker, xtal supplied, product detector for s.s.b. \$240, 10% discount for cash.

★ SCR522 V.H.F. TRANSMITTER/RECEIVER

100-150 Mc. Complete with tubes, \$28.

★ PERSPEX SHEET

1/16 inch thick. Size 4 1/2" x 16". \$1 per sheet.

★ COMMAND TRANSMITTERS

4-5.3 Mc., 5.3-7 Mc. Complete with tubes, \$15.

★ TR3624 TRANSMITTER/RECEIVER

Approximate frequency, 200 Mc. Contains 46 miniature tubes, \$30.

WANTED TO BUY

Communication Receivers, Test Equipment, etc. Call, write or phone. Equipment inspected and picked up at your convenience any night or week-end.

★ VALVES

EF50, 20c ea.; 7C7, 10c ea.; CV131, 6CQ6, 50c ea.; 6AC7, 20c ea.; 6AL5, 20c ea.; 6C4, 6AM5, 50c ea.; 6J6, 50c ea.; 6FQ5, 50c ea.; 12AD6, 60c ea.; 12AU6 60c ea.; 12BA6, 50c ea. Mullard MW6-2 t.v. projection tube, 3", \$1.50.

★ SIGNAL GENERATORS

TE22 Audio Generator, freq. range: sine 20 c.p.s. to 200 kc., square 20 c.p.s. to 25 kc., in four ranges. Output, 7v. p-peak. Output impedance, 1,000 ohms. Price \$42.

★ METERS, P25 TYPE

0-500 uA., \$5.25; 0-100 uA., \$6.95; 0-1 mA., \$4.50; 0-10 mA., \$4.50; 0-50 mA., \$4.50. Full range of Meters and Multi-Testers available.

★ MINIATURE CAPACITORS

New shipment. 600 v.w. Values: 0.001, 0.02, 0.005, 0.0005, 0.0002, 0.0001 uF. \$2 for 80, plus freight.

★ EDDYSTONE MODULATION METERS

160 Metres - 10 Metres. Provision for phones. Complete with antenna and carrying case, \$12.00.

★ COMPUTER BOARDS

Contains five OA202 silicon diodes. Pot core, capacitors, etc. 75c each.

★ SWITCH POTS

Miniature transistor radio type pots. 2 megohms and 5 megohms. 12c each or 10 for \$1.00.

★ DYNAMIC MICROPHONES

DX29 high impedance, with in-built gain control and desk stand. Response 100-15,000 c/s. \$7.50.

★ MILLER 455 Kc. PRE-WIRED I.F. STRIPS

Comprises two i.f. stages, ceramic filter, diode detector, 55 db. gain, NPN silicon transistors, d.c. requirements 6v. d.c. 2 mA., size 1 1/2 x 1/2 x 1/2 inch. \$8.70 inc. tax.

★ TRI0A MULTIMETERS

100,000 ohms per volt. Ranges, d.c. volts: 0.5, 2.5, 10, 50, 250, 500, 1K.; a.c. volts: 2.5, 10, 50, 250, 1K.; d.c. current: 10 uA., 1 mA., 25 mA., 250 mA., 10 amp.; resistance: 20K, 200K ohms, 2 megohms, 20 megohms. To clear, \$25.95.

★ POTENTIOMETERS

Wire wound, 40c each; carbon, 25c each.

★ RESISTORS

1 watt, I.R.C., Welwyn, Eire, Ducon, Phillips, \$2 per 100.

★ 1/2 H.P. 2-STROKE MOTORS

Ohlsson and Rice. Brand new, just imported from America. Weighs only 5 1/2 lbs. 6,300 r.p.m., supplied with 3:1 reduction gearbox, output 2,100 r.p.m. Ideal for driving Alternators for Field Days. Fuel consumption 1 pint per hour. \$30.

ANY QUERIES

Beginners are welcome, ask Jim and Laurie Gardiner any questions. They are Amateur Radio operators and will be only too pleased to assist.

★ CRYSTALS

Personal shoppers only, \$1 each.

★ SPECIALS

New 815 valve, \$1. New DA41 (TZ40), \$1.50.

3000 type Relays, 50c each.

Inter-Office Phones, 15-station type, \$4 each.

7-pin skirted Valve Sockets, P.T.F.E. insulation, silver plated, only 20c each, c/w shield.

Speaker Transformers: 7000 ohms to 2 ohms; 10,000 ohms to 3.5 ohms; 50c each.

9-pin skirted P.T.F.E. Valve Sockets with shield, 50c each.

3 uF. 1000v. d.c. Block Capacitors. Only 25c each or 2p per dozen.

ALL ITEMS FREIGHT EXTRA

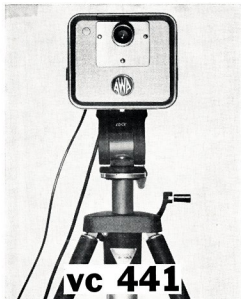
UNITED TRADE SALES PTY. LTD.

280 LONSDALE ST., MELBOURNE, VIC. (Opp. Myers)

Phone 32-3815

WANTED

by TV Amateurs



BARGAIN PRICED VIDICON CAMERAS

Here is your chance to purchase closed-circuit television equipment at an unusually low price. A.W.A. has available shop-soiled cameras at \$280.00 each, plus 12½ % sales tax, and brand new cameras for just \$310.00 each, plus tax. The cameras are complete with vidicon, but do not include lens or tripod.



Engineering Products Division
47 YORK STREET SYDNEY 2 0233

AMALGAMATED WIRELESS (AUSTRALASIA) LTD

MELBOURNE
67 9161

BRISBANE
41631

ADELAIDE
51 0111

PERTH
28 3425

LAUNCESTON
21804